The Magazine of the Registered Professional Engineer

American Engineer

OCTOBER 1959

Will Engineering Advances Reduce Our Traffic Deaths?

• • •

Engineering—The Swiss Word for Success

• • •

Plus These News Sections:

Consulting
Education
Government
Industry

THE 86th CONGRESS and ENGINEERING LEGISLATION

Harold A. Mosher, P.E., left, President, National Society of Professional Engineers, talks engineering legislation with Senate Majority Leader Lyndon B. Johnson of Texas on Capitol steps.

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Product	Amount Purchased Annually
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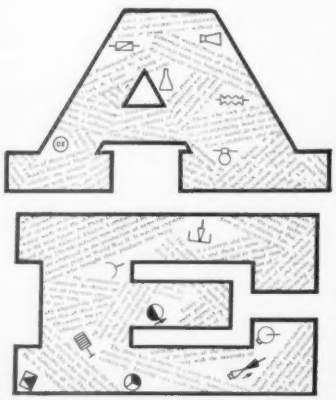

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"This Month"

The impact of engineering on today's world is felt more on Capitol Hill now than ever before. Whereas NSPE once testified only occasionally, the organization now frequently finds itself "on the Hill" presenting the engineer's story to all-important Senators and Representatives. Read how often this happened and on what subjects in a full staff report on the work of the 86th Congress, beginning on page 19.

Everything's tiny about Switzerland, except its technology. Time was when Swiss engineers confined their activities to watchmaking, but today these clever people combine "engineering and craftsmanship" to remain one of the world's leading industrial nations. Page 25.

"Ethics—Professional Bulwark" appears on page 29 and reminds us just how important it is for us to think about "what" we are as "where" and "how" we are.

All thinking Americans are appalled at the present rate of highway deaths. This tragic commentary on modern life of necessity hangs heavily over the engineering profession because it is from this group that at least some relief is expected. Well, engineers are doing something about it in the design of safety devices! See page 31 for a full report from Detroit and elsewhere.

A look at the news:

General. The headlines: Registration Increase Noted for Bureau of Reclamation Engineers . . . Canadian PE's Adopt Statement on Unions . . . T. M. Linville Named to National Research Council . . . Conflicting Figures by USSR. . . . Pages 8-10.

Consulting. Story here on handling of Government subcontract work tells how firms so engaged are subject to Walsh-Healy Act (minimum salaries). Also stories on unlawful practice fine through Canadian court; two films now available on retirement bill, and announcement of new "Private Practice News." Pages 11-12.

Education. The news here is on how Michigan State University is offering a course to engineers and others directed at eliminating some of the "Ugly American" criticisms of overseas projects. Also: The University of Detroit has reported that starting salaries for their grads have jumped another $20 to an average of $524. Page 13.

Government. Good news for government engineers as Congress approves bill for more super grade positions. In other developments, a bill to amend the National Science Foundation Act has been signed by the President. Page 14.

Industry. The NLRB is re-examining its policy for technical employees. In other NLRB news, it is noted that the agency has rejected union's bid for a new election of Pennsylvania Power & Light Co. engineers. Pages 16-17.

And on page 37, read how the nation's largest professional observances—National Engineers' Week—is off to a greater start than ever before! New theme: "Engineering's Great Challenge—The 1960's."

AND NEVER FORGET, THE AE IS NOW AMERICA'S LARGEST ENGINEERING MONTHLY! THIS ISSUE, 57,837 COPIES IN CIRCULATION.

Kenneth E. Trombley

Editor

advertisement

Letters to the Editor

Personal Professionalism . . .

Dear Editor:

I demur to the continual propaganda that professional status is conferred on an individual by others. In the free world we still have professions other than the Communist profession which is the glorification of the state.

In our society the right and power of professional status is reserved for the individual. The position is one of responsibility which must be assumed by the individual. The police state that destroys all professions except one has not yet taken over this country. Let us train the young engineer to understand political freedom and not delude him to expect professional status to be conferred. Security may be conferred by the state but profession is announced by the individual.

R. B. Macfarlane, P.E.
Richmond, Va.

Pro AE . . .

Dear Editor:

I have read your July issue with great joy and interest. My husband, a registered professional engineer, receives several engineering magazines . . . I look forward to reading each magazine as it arrives in the mail. To be frank, I read them and then mark sections of interest to my husband and show them to him to read . . . .

Mrs. Aggie J. Boulahanis
Lansing, Ill.

$30,000 Investment . . .

Dear Editor:

Recent articles in the AMERICAN ENGINEER emphasize the importance of professional development after graduation. I wonder if many engineers realize the dollar value of their degree? A recent study showed that if one had worked instead of going to college and counted all the money spent on tuition, books, dormitory expenses, etc., it would be found that a college education cost very nearly $30,000.

You may be a homeowner and have an additional investment of, say $18-20,000. Add a car at an estimated $3,000. We paint our house, fix the roof, and add shrubs to maintain and improve the value of our investment. We polish the car, change the oil and grease it regularly to keep it in good working order. Yet both these investments are less than the $30,000 invested in our degree.

How can you protect this investment and increase its value? Here are several positive steps you can take for professional development:

1. Postgraduate Courses

I'm sure you will all agree that even with the heavy four-year curricula in engineering colleges, there is plenty to learn in areas of specialization. Subjects that are an everyday part of our technology are treated but briefly in undergraduate school. And our field of engineering, in these days of satellites, plasma motors, and direct heat-to-electricity devices is moving ahead so rapidly that it is a challenge to just keep up. Postgraduate courses are one way. Many companies assist with tuition expenses.

2. Company Training Courses

It is one thing to expand and develop our knowledge in new fields, but at the same time you must not let the basic principles get rusty—just as we drain the rust out of the boiler in our basement periodically.

Some companies conduct refresher courses that require only your attendance.

3. Professional Society Activities

Perhaps this item should have come first. There are literally scores of professional societies. You name an engineering field of activity and I'll wager there is a society for it. Do you belong to at least one? Here are the figures:

There are today in the United States between 550,000 and 750,000 engineers qualified by education and experience. Of that number it is estimated that some 350,000 belong to national engineering societies (excludes student memberships but does include engineers who may belong to two or more societies.)

Why do engineers join societies? Primarily because it provides a place to exchange and express ideas on a professional level with others that have related problems. Belonging then, is not enough. Participation is the key word—volunteering for, and accepting committee assignments, writing and delivering papers.

4. Trade Journals

These journals keep us posted on the most current developments in our field. If we are to keep abreast of advances, it behooves us to seriously review the accomplishments of our colleagues. As in the professional societies we should also contribute. Be the leader; that is how you develop.

5. Community Activities

The engineer with his professional training and analytical mind is in an excellent position to contribute to the activities of his community. Is your educational system adequate? Can you make suggestions to improve it? Can you assist high school guidance people by addressing a group on a career in engineering? Can you offer to help high school students with their science subjects? These are just a few things you can do in your community.

Ours is a dynamic profession. Advances are rapid. New machines, materials and processes are constantly being developed. We must keep pace by making sure that we too, are protecting our $30,000 investment by developing ourselves.

LOUIS J. FRANGIPANE, FIT
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(Circle 2 in Readers' Service Dept.)

Meetings of Note

American Institute of Mining, Metallurgical and Petroleum Engineers—Fall Meeting, October 4-7, Memorial Auditorium, Dallas, Texas.

Engineers' Council for Professional Development—Annual Meeting, October 5-6, Wade Park Manor, Cleveland, Ohio.

American Society of Tool Engineers — Semi-Annual Convention, October 8-10, Chase-Park Plaza Hotel, St. Louis, Missouri.

American Institute of Electrical Engineers—Fall General Meeting, October 11-16, Hotel Morrison, Chicago, Illinois.

Society of Plastics Engineers—National Technical Conference, October 13-14, Ambassador Hotel, Los Angeles, California.

American Society of Civil Engineers — Annual Convention, October 19-23, Statler-Hilton Hotel, Washington, D.C.

American Society of Heating, Refrigerating and Air-Conditioning Engineers — Semi-Annual Meeting, October 30-November 1, Traymore Hotel, Atlantic City, New Jersey.

What is The "Critical" Age for Personal Progress in Business?

YOU OFTEN HEAR young men in business say, "Just about every executive in the company I work for is between 45 and 70. I have plenty of time to get ahead."

Even more frequently, you hear men in their 40's and 50's complain: "The parade has passed me by. I'm too old to shoot for a top job so I may as well settle for just a living."

They're both wrong!

Young men who believe that success comes more or less automatically with time—*and* older ones who are convinced that youth is essential to personal progress—make this fundamental mistake: *Success in business is not a matter of years.* An early start helps, of course. But the only really important answer to swift and certain success is *superior knowledge.* If you have that, age becomes a purely secondary consideration.

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Managing is an art. And, like any other art, it is based upon a science. Just as the art of surgery, for example, rests upon the science of anatomy, *the art of management evolves from the science of business.* It follows, therefore, that no man can get very far in business without having first mastered the "anatomy" of business—the principles on which it operates.

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The Institute's program is outlined in a 48-page booklet titled "Forging Ahead in Business."

It is a fascinating little book about how success is achieved in business . . . not through any magical formula, but by the applicaton of a practical, time-tested plan which has been developed over the years by a distinguished group of academic and business leaders. We believe that it will help any man get down to bedrock in his thinking; however, there's no cost or obligation for it because—frankly—we've never been able to put a price on it that would reflect its true value. Some men have found a fortune in its pages.

If you would like a complimentary copy of "Forging Ahead in Business," simply sign and return the coupon below. It will be mailed to you promptly.

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Registration Increase Noted For Reclamation Engineers

As a result of official encouragement, nearly 400 of the staff of 628 engineers of the Bureau of Reclamation's Engineering Center at Denver, Colorado, are now registered professional engineers.

Commenting on the marked increase, Frank Prouty, chairman of the Colorado State Board of Registration for Professional Engineers and Land Surveyors, stated in the Board's annual report:

"The year 1958 was the most active in the history of the Colorado Board since it was founded in 1919 . . . The Bureau of Reclamation's engineering department with headquarters in Denver, is one of the most competent engineering organizations in the world and, during the past year, several hundred Reclamation engineers have sought registration."

E. W. Thorson, past president of the Professional Engineers of Colorado, has remarked, "It is gratifying to note the number of Bureau of Reclamation engineers who have obtained their professional licenses."

The listing of registered engineers is prominently displayed in the Bureau's Denver office. To give additional recognition and prestige to the registered professional engineers, they are also encouraged to display registration certificates in their offices as evidence of professional qualification and technical competence.

Canadian P.E.'s Adopt Statement on Unions

The members of the Corporation of Professional Engineers of Quebec have approved the following statement for inclusion in the Code of Ethics:

"The Engineer shall not be a member of a Trade Union nor participate as such in any form of Trade Union activities, since he would then uphold a philosophy and certain methods of negotiation, incompatible with true professionalism such as the use of strikes and the like."

The revision will not be effective until approved by the Lieutenant-Governor-in-Council.

Dr. C. C. Long Elected Society President

Dr. Carleton C. Long, of Monaca, Pa., director of research, St. Joseph Lead Co., has been elected president of The Metallurgical Society of the American Institute of Mining, Metallurgical, and Petroleum Engineers. He will take office during the annual meeting of the Institute, to be held February 14-18, 1960, in New York City.

Dr. Long succeeds Dr. John Chipman, head of the Department of Metallurgy, Massachusetts Institute of Technology.

J. S. Smart, Jr., of New York City, general sales manager, American Smelting and Refining Company, has been named vice president of The Metallurgical Society and its president-elect, slated to take office as president in 1961, following Dr. Long's term. Mr. Smart also has been elected to a three-year term on the AIME board of directors.

Traffic Engineers Give Past Presidents' Award

The 1959 Past Presidents' Award of the Institute of Traffic Engineers has been made to Robert D. Conklin, traffic investigation engineer for the Oregon State Highway Department, for his paper, "A Comparison of Vehicle Operating Characteristics Between Parallel Lane and Direct Taper Freeway Off-Ramps."

Mr. Conklin, a junior member of the Institute of Traffic Engineers, was presented with a certificate at the twenty-ninth annual meeting of the Institute held in New York City in September.

The competition is conducted annually by the Institute of Traffic Engineers to recognize the work of its younger members. Eligible are members under thirty-five years of age, who must submit a paper reporting on original work in the traffic engineering field.

T. M. Linville Named to National Research Council

Thomas M. Linville, of the General Electric Research Laboratory, has been named a member of the National Research Council. The appointment was made by Detlev W. Bronk, president of the National Academy of Sciences, with which the National Research Council is affiliated.

Linville, manager of the Research Operation Department at the GE Research Laboratory, will represent the American Institute of Electrical Engineers in the NRC's Division of Engineering and Industrial Research. His term will expire June 30, 1962.

Miniaturization Awards Competition Opens

Nominations for the 1959 Miniaturization Awards Competition are now being accepted, Horace D. Gilbert, chairman, Miniaturization Awards Committee, has announced.

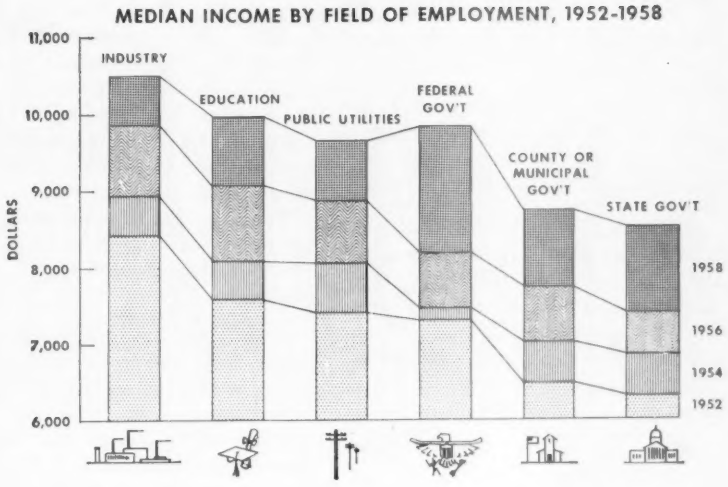
The award is presented annually in recognition of outstanding contributions to the advancement of the field of miniaturization. In addition to the top award, ten certificates of excellence are given each year.

The awards program was established in 1957 by Miniature Precision Bearings, Inc. Further information is available from the Committee at Box 604, Keene, N.H.

Just Off the Press!

NSPE's 4th Biennial

PROFESSIONAL ENGINEERS' INCOME and SALARY SURVEY

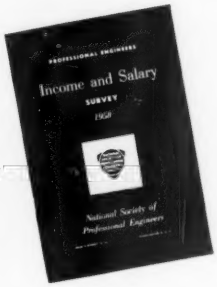


Here is the latest in a continuing series of income and salary surveys of the engineering profession made by the National Society of Professional Engineers. Started in 1952, the surveys are part of a long-range income and salary study program. The fourth biennial survey gives a detailed picture of engineer earnings by year of entry into the profession, by geographical region, by type of employer, by engineering specialty—and by a variety of other categories. Salary and income data from approximately 19,000 registered, professional engineers were studied for this newest survey report. Published in handy booklet form, the 1958 Survey provides a documented study at all levels of professional experience. One of the features of the report is a detailed analysis of salary trends recorded in the four surveys to date.

GET SOUND STATISTICAL ANSWERS TO THESE QUESTIONS

- ► Which of the major engineering specialties has the highest median earnings?
- ► In what fields have professional engineers achieved the largest gains in total earnings over the period 1952-58?
- ► How do engineering salaries compare in the fields of education, public utilities, industry, government and private practice?
- ► How much, percentagewise, have engineer earnings increased throughout the country during the period 1952-58?

56 pages of charts • tables • graphs • textual analysis



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Conflicting Figures by USSR

How many engineers is the Soviet Union turning out each year?

Apparently, the Russians, themselves, are not in too firm of an agreement on the number.

Premier Khrushchev, during his tour of the U. S. last month, told the National Press Club that the Soviet educational system was producing 106,000 engineers a year, a figure which he said was about three times the number of engineers graduated from U. S. schools.

But, just a little more than twenty-four hours later, Mr. Khrushchev, speaking before the Economic Club in New York City, announced that Russia graduated 94,000 engineers last year "while you graduated 35,000."

And to further compound the numbers game, Vyacheslav P. Yelyutin, Soviet Minister of Higher Education, who was traveling with the Khrushchev party, boasted that the Russians had graduated 1,700,000 engineers in the last seven years and planned to turn out 2,300,000 in the seven years to come. However, taking Mr. Khrushchev's highest figure of 106,000, the Soviets would have graduated only 742,000 engineers.

Even the minimum Russian figures far outstrip the engineering manpower statistics for the U. S. Henry H. Armsby, chief for engineering education in the Department of Health, Education, and Welfare, says that 35,379 persons received bachelor degrees in engineering in 1958, about a 4,000 increase from the 1957 totals. The figures for 1959 have not been completed, but Mr. Armsby believes the total will rise to about 38,000 engineers.

Steinman to Head MDAA Division

Dr. David B. Steinman, New York City, has been named chairman for the third consecutive year of the Engineers and Scientists Division of Muscular Dystrophy Associations of America, Inc., it has been announced by William Mazer, MDAA president.

Dr. Steinman will organize support for MDAA's 1959 Campaign for funds to increase medical research into the crippling, muscle wasting disease, muscular dystrophy.

Canadian Figures Show 74 Per Cent Registered

More than seventy-four per cent of Canada's qualified engineers are registered according to a survey just completed by the Canadian Department of Labour.

The figure is well above that of the United States where an estimated forty-six per cent of the country's 500,000 qualified engineers are registered.

Dismissal of P.E. Opposed by AWWA

The American Water Works Association has reaffirmed its stand against the use of political considerations in the appointment of water utility managers following the dismissal of a registered professional engineer as director of the Kansas City, Mo., Water Department.

The engineer, Melvin P. Hatcher, a member of the Missouri Society of Professional Engineers was dismissed after a new administration took office in Kansas City.

Prompted by the Kansas City action, the AWWA's board of directors meeting at San Francisco went on record in support of "a system of good local government which, first, recognizes the value of the continuity of service of acknowledged, trained and competent water utility personnel and, second, will not inaugurate or permit the ill-advised and unsupportable dismissal of such personnel."

In its monthly publication, *Willing Water,* the AWWA commented:

"Becoming ever more complicated in their operations, municipalities need public servants of Hatcher's qualifications. To sacrifice such ability for strictly political reasons is not even politically smart."

The dismissal of Hatcher may also result in a change in the site of the 1963 AWWA Conference which earlier had been scheduled for Kansas City. In adopting its resolution on the Hatcher dismissal, the board asked its Executive Committee to "give reconsideration to the board's previous approval of Kansas City as the site for the 1963 AWWA Conference."

Free Booklet Available To Assist Authors

Writing and Publishing your Technical Book is the title of a free booklet being made available by the F.W. Dodge Corporation.

Prepared to assist authors through the initial stages of developing book manuscripts, the booklet may be obtained by writing the F.W. Dodge Corporation, 119 W. 40th St., New York 18, N.Y.

ASTE to Convene in St. Louis, Oct. 7-10

Space age developments in creative manufacturing techniques will be discussed by engineers coming to St. Louis, October 7-10, for the semi-annual meeting of the American Society of Tool Engineers.

Wayne Ewing, Los Angeles, president of ASTE, has stated that thirty experts in modern metalworking methods would participate in technical sessions to be staged concurrent with the meeting of the society's directors.

The ASTE meeting will be held at the Chase Park Plaza Hotel. Industry in the St. Louis metropolitan area will be honored at a dinner, October 7.

AE Consulting—

Walsh-Healy Applied To Drafting Service

Engineering firms handling design work by subcontract for a manufacturer under Government contract should be aware of the possibility that they are subject to the Walsh-Healy (Public Contracts) Act, requiring payment of minimum salaries for stated classifications of work and time-and-a-half for over forty hours per week.

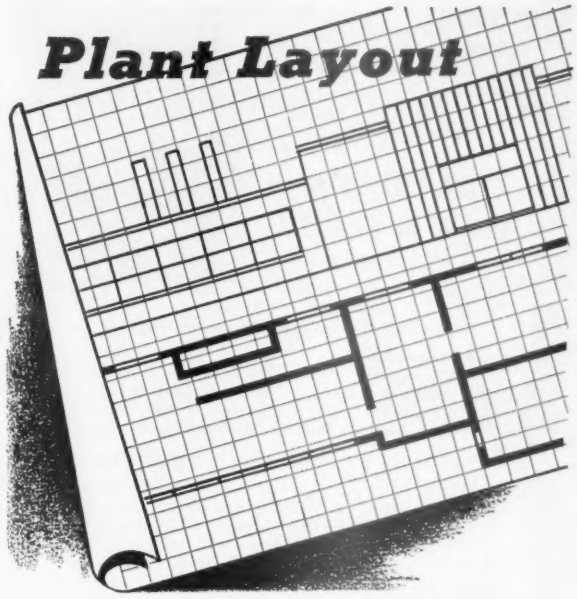
A Department of Labor examiner ruled recently that a firm doing drafting work for an aircraft company was covered as a "substitute" contractor, rather than a noncovered "subcontractor," because the firm was doing work on a specific product itemized with detailed specifications in the contract. Normally, a subcontractor who supplies parts or services to the prime contractor when it is the regular practice in the industry to do so is held to be not covered. In the instant case, however, the examiner held that the enginering firm "did work on the prime contract drafting itself and in so doing the [engineering firm] was but discharging the contractual obligations of the prime contractor."

The engineering company was required to pay damages for nonpaid overtime of its employees on the covered work. Upon payment of the damages, however, the company was removed from the "blacklisting" penalty of the Act. The argument that the employees involved were executive, administrative, or professional, and thus exempt from the wage requirements, was rejected because they were paid on an hourly, rather than a salaried, basis. (Far West Engineering Co., No. PC-721.)

Unlawful Practice Draws Fine in Canadian Court

An unlicensed individual, who entered into an engineering partnership with a registered professional engineer, was recently found guilty of violating certain provisions of the Ontario Professional Engineers Act in that he engaged in conduct which the court felt could lead the firm's client to believe that he was a professional engineer.

The accusation alleged that the defendant entered into a partnership with a registered professional engineer whereby the P.E. was to supervise, approve and be responsible for the engineering and architectural aspects of the business, and the nonlicensed partner was to be responsible for obtaining the contracts that the business might perform. A contract was entered into for the design of an office building, which was



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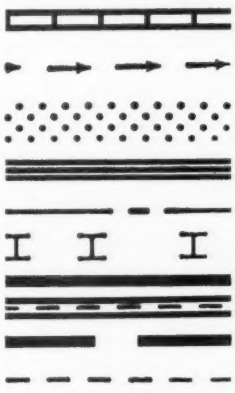

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subsequently erected. Prior to completion of the building, interviews, changing plans, drawing plans and advising were performed by the nonlicensed partner, while the licensed partner checked the plans as they were finally submitted and placed his seal on such plans.

The court ruled that the nonlicensed partner violated the Act in that he held himself out and conducted himself as a professional engineer by performing the following services: discussing the nature of the building, going over plans with officials of the client, giving advice, suggesting changes, dealing with the client's representatives as an engineer would, and finally, using his name in the partnership.

Such action, the court concluded, could do nothing but lead the client to the belief that the nonlicensed partner was in fact a registered professional engineer. The court also declared that although the defendant did have a partnership arrangement with a registered professional engineer, this did not remove him from responsibility under the Ontario Act.

The defendant was sentenced to a fine of $157.50, or ten days in jail.

Two Retirement Bill Films Available Upon Request

Two films on the Keogh-Simpson-Smathers-Morton self-employed retirement bill have been produced to explain the need for and terms of the proposed legislation. One of the productions is in color and features Senator Smathers answering questions about the bill. The other, in black and white, covers a discussion between Senator Smathers and Senator Moss of Utah, another backer of the legislation. The films are 16 mm. and run about ten minutes each.

For local showings, at no charge, submit booking request to Robert A. Ansheles, Executive Director, American Thrift Assembly, 1025 Connecticut Ave., N.W., Washington 6, D. C.

'Private Practice News' Publication Announced

Alfred H. Samborn, chairman of NSPE's Functional Section for Consulting Engineers in Private Practice, has announced the availability of a new monthly newsletter entitled *Private Practice News*.

The publication will report on developments of interest to consultants. It will be sent to Society members who become participants in the Functional Section. (See coupon, page 15.)

Are YOU taking full advantage of the free services offered you in AE's Readers' Service Department? See page 49.

MSU Starts Five-Year Plan For International Service

A new program in engineering for international service at Michigan State University may go a long way toward eliminating some of the "Ugly American" criticisms of overseas projects.

While the engineering student electing this program learns his specialty, he will also learn something about the language, history economics, geography and politics of the country where he expects to work.

"Thousands of American engineers have gone overseas with little or no knowledge of the language, history and customs of the foreign nation," reports Dean John D. Ryder of MSU's College of Engineering.

He points out that when the Russians send out technical assistants they speak the language and are familiar with the region where they are to work.

Michigan State's engineering for international service is a five-year program in which the engineer receives not only the bachelor of science degree but also the bachelor of arts.

In the first two years the student takes the usual engineering courses. In the third, fourth and fifth years the remaining engineering courses are pursued along with liberal arts courses.

Students will specialize on one of the fields of engineering—agricultural, chemical, civil, electrical, mechanical or metallurgical—but will also take courses appropriate to the region of the world where they plan to work.

Bell Lab Engineers Receive Master's Degrees

The first engineers to enter Bell Laboratories' unique educational program run in cooperation with the New York University received their master's degrees recently.

The ninety-seven men in the class were awarded their diplomas for completing the two-year advanced study program at the NYU-Bell Laboratories graduate center at the Labs' campus-like location in Murray Hill, N.J.

The graduate center was opened in the fall of 1957. It is staffed by faculty members from NYU's College of Engineering and is financed entirely by the Laboratories. The young men in the program receive full salary from the Laboratories while studying and working part-time in the technical departments.

The men take courses designed to develop a strong background for engineers embarking on careers in creative work in the field of communications. Their studies lead to NYU master's degrees in electrical or mechanical engineering or engineering mechanics.

The NYU program is the first two years of the Laboratories' three-year Communications Development Training Program.

Starting Salaries Up For 1959 Graduates

Graduates of engineering schools in 1959 apparently are getting a better financial start than did their 1957 and 1958 predecessors.

The placement service at the University of Detroit reported monthly starting salaries for engineering graduates averaged $524 this year—$20 above the 1958 figures and $32 above the beginning salaries of 1957.

Meanwhile, a survey of ten leading engineering colleges by *Machine Design* magazine showed a four per cent gain over 1958 and a ten per cent rise over 1957 starting salaries. Average starting range was $495 to $535 with electrical engineering graduates again showing the top figures, $510 to $550.

In both the University of Detroit and the *Machine Design* surveys, the "type of work" ranked as the first concern of the graduate.

"Type of work I will do," "type of work employer does," "advancement possibilities," and "location near home" ranked first, second, third and fourth as first choice in the University of Detroit study. Although a low ranking first choice, "salary" was the most mentioned second and third choice, the Detroit survey said.

Annual Banquet in Dallas

W. L. Cobb, center, president of the Dallas Chapter of the Texas SPE, poses with future engineer Mike Pearson at the annual banquet given by the Engineers Club of Dallas for 300 high school seniors planning to enter the engineering field. Looking on is Paul Robbins, NSPE executive director, who was the principal speaker.

Congress Approves Bill for More Super Grade Positions

Congress has approved a bill allocating an increase of 158 so-called P.L. 313 positions to the Defense Department for engineers and scientists to carry out research and development relating to the national defense. Existing authority permits the establishment of 292 such positions; the new proposal would raise that figure to 450. The salary range for these positions is $12,500 to $19,000 per year depending on the job requirements and the qualifications of the individual.

In addition, the bill authorizes the Secretary of Defense to place a total of 372 positions in grades 16, 17 and 18 of the general schedule of the Classification Act, an increase of sixty-nine over the present allocation of 303. These positions pay from $14,190 to $17,500 per year.

The 450 engineering and scientific positions which this bill would authorize the Defense Department are not new positions, but are simply higher grade authorizations required to enable the Department to provide equitable treatment for engineers and scientists in positions of comparable significance and responsibility to the top levels throughout the Department. (H.R. 6059).

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President Approves NSF Act Amendments

A bill to amend the National Science Foundation Act of 1950 in order to clarify and make explicit the Foundation's authority to stimulate scientific training and careers has been signed by the President.

Previously, the Foundation was authorized to award fellowships for scientific study or work at accredited nonprofit institutions of higher education. The new law deletes the words "accredited" and "of higher education" in order to take care of the situation where the successful competitor for a fellowship wishes to study or work at a research institution which is not an educational institution, such as the Oak Ridge National Laboratory or the National Institutes of Health.

Other changes will permit the Foundation to cooperate in international scientific activities rather than merely to cooperate in research activities, and to award scholarships and fellowships to foreign nationals for scientific study or work in the United States. Prior to the new law, the Foundation could not grant scholarships or fellowships to foreign nationals. (Public Law 86-232).

Report Claims Manpower Not Being Utilized

The Subcommittee on Manpower Utilization of the House Committee on Post Office and Civil Service, in a 47-page report analyzing missile contract procedures, has declared that less than full utilization is being made of engineering and scientific manpower in both the Federal Government and in private industry.

Based on talks with engineering and scientific personnel, the Subcommittee report questioned whether the need exists for the present degree of separate missile research and development programs, each wearing different military uniforms and under different military commands. "The net results accomplished to date could have been performed with less manpower under a more coordinated and practical policy," the panel concluded.

Among other things, the lawmakers further declared that present policies have permitted some firms to pay engineering and scientific employees salaries above those paid Federal employees in similar jobs, and that there have been instances when some Federal employees have been lured into private industry by high salaries made possible under cost-plus contracts. The report also asserted that the Defense Department lacks standards by which it can gauge whether industry is doing its job properly and as inexpensively as possible.

Amstuz Appointed to Top Post in New York

Commissioner Keith S. McHugh of the New York State Department of Commerce has announced the appointment of John O. Amstuz of Troy, consulting engineer and manufacturing executive, as First Deputy Commissioner of Commerce.

In commenting on the appointment, Commissioner McHugh said: "Mr. Amstuz's broad background and experience as an engineer and manufacturing executive make him a valuable associate and second-in-command on the Commerce Department team. It is our task to help the State gain a more vigorous economy and more job opportunities in accordance with Governor Rockefeller's program. This is the number-one goal to which all in the Department must be dedicated."

Muss Named to Reservist Group

David L. Muss, professional engineer and land surveyor of Mt. Freedom, N.J., has been named to the National Defense Executive Reserve.

The Reservists, composed of more than 1,000 men throughout the United States, are part of an organization of experts who will take posts in a government production agency in the event of a national emergency. Mr. Muss has been assigned to the Water and sewage Industry and Utilities Division.

Correction . . .

In a report on a case by the NSPE Board of Ethical Review in the September issue of the American Engineer, it was erroneously indicated that William F. Ryan **did not** vote. Mr. Ryan **did** vote —and in the affirmative in this case. Thus, it was five for the majority report, one dissent, and only one not voting.

MEMO

To:
ENGINEERS IN PRIVATE PRACTICE
ENGINEERS IN GOVERNMENT PRACTICE

Subject:
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To better serve the special interests of engineers in various phases of professional activity, the NSPE Board of Directors has authorized the establishment of functional sections within the framework and with the support of the National Society.

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NLRB Re-examining Policy For Technical Employees

The National Labor Relations Board is in the process of re-examining its traditional policy (not required by the law) of separating technical employees from production and maintenance units if any party objects to their inclusion. Neither the law nor Board regulations nor decisions define the term, "technical employee." Several large industrial employers of engineers and technicians have filed briefs with the Board to urge retention of the policy. In general, they call attention to the growing importance of technicians in industrial employment and their vital middle position between the professional employees and skilled craftsmen.

In the Board's handling of "technical employee" cases, there has been a considerable overlap and confusion as between engineering and scientific technicians under generally accepted definitions of the professional societies and governmental agencies, and employees of lesser training and skill who may more nearly resemble highly skilled craftsmen or production workers.

The re-examination of the Board's policy arises from a case in which the employer and two competing unions are in agreement that the technical employees should be joined with production and maintenance employees – although the unions had originally objected to the inclusion of the technical employees. The employer said it was not practical to separate the 600 hourly paid employees involved—400 of whom are P&M employees and 200 technical employees or plant clericals.

The company told the Board that the technical employees are in close relationship to P&M employees under common working conditions and areas and community of interest. The employer said it was not practical to separate the two groups, one of which may be unionized and the other not, or both represented but through different unions.

The union and industry spokesmen at the Board hearing were in agreement that the technical employees will play a larger part in future industrial operations, while production employment will decline in the face of automation and more elaborate technological processes. (*Litton Industries of Maryland, Inc.*, 5-RC-2663)

Degree Emphasized in Professional Status Case

The NLRB appears to be moving ever closer to equating professional status under the Taft-Hartley definition to a collegiate degree requirement. The latest indication along this line is in a Board decision involving senior, project and junior engineers who had some training in technician schools and considerable practical experience in airborne electronics.

It was noted, however, that graduate engineers are much farther advanced in certain subjects, such as mathematics, but did not have as much technical training and practical experience.

Also, the Board observed that the employer had adopted recent criteria for senior engineers requiring college education and/or technical training, or ten years of practical experience in airborne electronics, and that project engineers have a college education or seven years of practical experience in airborne electronics, with technical

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Construction in Pittsburgh

Pittsburgh's Gateway Center is framed between a Dravo Corporation derrickboat and the almost-completed north main pier of the new Fort Duquesne Bridge across the Allegheny River. Dravo officials expect to have the entire substructure of the double-deck four-lane highway bridge completed by this fall.

training also being counted. The job descriptions also provide that a junior engineer "can have" a college education or technical training or the equivalent of four years of practical experience in airborne electronics.

Without detailing its analysis, the Board simply noted that none of those in dispute had a college degree and ruled them not to be within the professional definition. A footnote to the case cited recent decisions also emphasizing a college degree in evaluating professional status. The ruling held, however, that the engineering categories involved were "technical employees," along with technicians and draftsmen, and entitled to a separate vote under Board policy. *(Dayton Aviation Radio & Equipment Corp.*, Dare, Inc. 8-RC-3427)

Board Rejects Union Bid for New Election

A union request for a new election at the Pennsylvania Power & Light Company, following the rejection of the Utility Engineers Association (ESA), 110 to 42, has been turned down by the National Labor Relations Board. The Board dismissed the union's charges that the company had unduly influenced the election last December by threats, promises of benefit, and coercive statements.

In rejecting the charges, the Board upheld the regional director's finding that the statements in a letter distributed to all eligible voters prior to the election "did not exceed the bounds of protected free speech." The other major contention of the union was that the company had violated the Act because of certain discussions before the vote between supervisors and some engineer employees.

In a second report to the Board to deal specifically with this point, the regional director found that three supervisors had discussed the employer's Salary Administration Plan with eighteen employees out of a total of 153 eligible voters. The Board upheld the finding that it was normal and common practice for the employees involved to visit the office of their supervisor to discuss work problems.

Even though the discussions were part of the company's campaign for a vote against the union, the report said, this phase of the conversation occurred only after the employee had expressed an interest in having the company salary plan explained. Under all the circumstances, the Board said the company conduct was not coercive.

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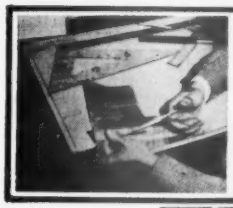

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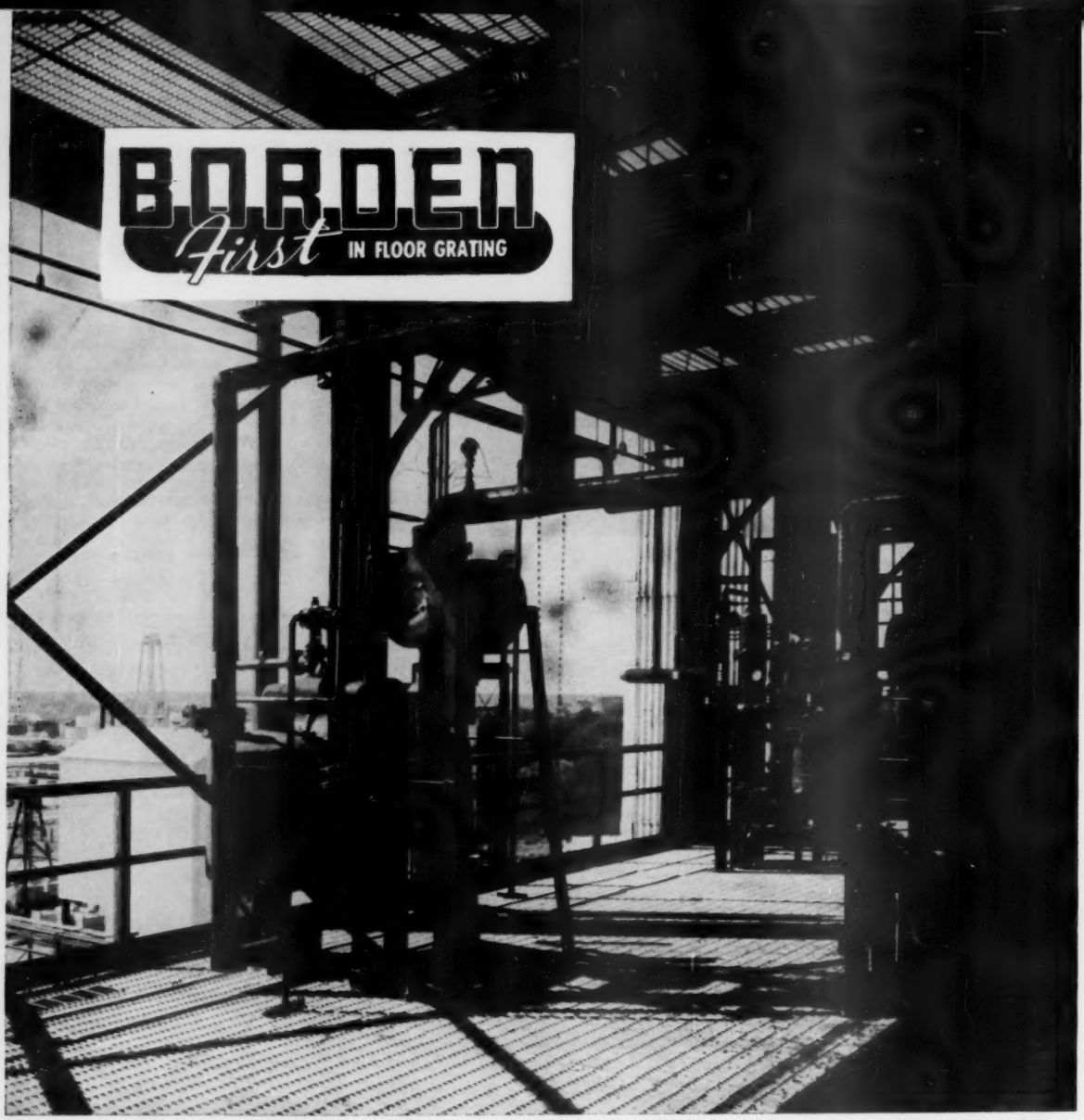

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A Staff Report:

The 86th Congress and Engineering Legislation

From Taft-Hartley to Keogh-Simpson, It's Been a Busy Nine Months

A WEARY Congress wrapped up the final details of the first half of its 86th session last month, leaving behind new evidence of solid legislative recognition for the engineering profession.

Everything from labor reform legislation to the bread and butter questions of government fee schedules found the professional engineer in the thick of the law making processes.

For NSPE, the session was one of the busiest in its 25-year history of legislative action for the professional engineer. Working through its legislative staff and functional sections, the Society was on Capitol Hill throughout the nine-month session, presenting more than 22,000 words of testimony before a dozen House and Senate committees. Behind this mound of committee testimony was a continuing grass roots campaign of letters and public relations action on the part of local chapters and individual members.

And what did all this activity mean for the professional engineer?

• It brought him important safeguards for his separate election rights in union organization efforts.

• It stopped an attempt to place a five per cent ceiling on engineering fees in government projects.

• It pushed nearer realization a plan which would provide retirement programs for self-employed engineers.

• It gave a new boost to legislation which would establish separate classification and pay schedule for government engineers.

• It discouraged the TVA from placing its engineering services in competition with those of private consulting firms.

• It brought new recognition for the engineering profession through the establishment of a National Medal of Science.

Beyond these specific areas were the broader questions of public works, highway construction, Mutual Security technical assistance and housing—all important legislation for major segments of the engineering profession.

But, labor reform legislation—easily the hottest issue of the session—provided a clear example of just what legislative action meant to the professional engineer in the 86th Congress.

Here, buried deep in the complex labor bill, was a provision allowing pre-hire agreements between building contractors and unions, something

NSPE Executive Director Paul Robbins chalks up the results of Congressional action on engineering legislation during the past nine months.

which the NSPE feared would destory the separate election rights of professional engineers engaged in the building industry.

Insisting that engineers retain their separate voting rights contained in the Taft-Hartley Act, the NSPE told the Senate Labor Committee last spring that "professional employees, without the protection of an NLRB certification, are completely at the mercy of employer-union agreements, and we can see only too plainly a situation in which professional employees may become the pawns in the chess game of collective bargaining."

These efforts by NSPE—efforts which acutally began back in the last session of the 85th Congress—combined with a convincing display of grass roots sentiment from individual engineers prevailed upon the committee to include in its report on the Kennedy-Ervin Labor Reform Bill the statement that "the construction industry provision is not intended to affect the status which professional engineers now enjoy under the statute (Taft-Hartley)." This statement presumably would safeguard against any attempt to force professional engineers into building trades unions against their will.

Engineers barely missed a further victory in the labor fight when the House version of the legislation, the Landrum-Griffin Bill, included procedures which would have more clearly protected professional employees from such pre-hire agreements. However this provision of the Landrum-Griffin Bill was dropped and the Kennedy-Ervin approach to the construction provision was adopted in the Conference Committee. The Conference Committee's Bill has now been adopted by both Houses and has been signed into law by the President.

While the battle was raging over the reform legislation, NSPE also moved in another vital area in the labor field through endorsement of legislation which would clearly exclude engineers' "sounding boards" from the Taft-Hartley definition of a "labor organization." The legislation, commonly referred to as the "Freedom of Association" Bill, was reintroduced by Rep. Carroll Kearns of Pennsylvania, but it was still buried in committee at the end of the session.

Need for the legislation became more apparent after the Supreme Court held that employee committees at the Cabot Carbon Company were labor organizations under the definition of the Taft-Hartley Act. Despite important differences between these employee committees and the engineers' sounding boards, the decision did raise a question of

The Supreme Court's decision in the Cabot-Carbon Case put new emphasis on NSPE-supported legislation which would exempt sounding boards from the Taft-Hartley definition of labor organizations.

the status of all such employee organizations. Kearns' Bill apparently would eliminate the question by adding a proviso after the present "labor organization" definition to specifically exclude organizations or professional employees which are not certified, nor recognized by the employer, for the purposes of collective bargaining.

Also bottled in the Labor Committee at the end of the session were amendments to the Davis-Bacon Act which would extend coverage of the act to engineers, architects and draftsmen. The act requires that employees on government projects be paid at the prevailing rate of the area. NSPE objects to the amendments on the grounds that they would lump professional engineers with such non-professional employees as mechanics and laborers. The Society has asked both the Senate and House Labor Committees for permission to testify when hearings are held on the amendments.

NSPE also voiced opposition to union-proposed amendments to a Civil Service Reorganization Act introduced by Senator Joe Clark (D. Penn.). The amendments, as proposed by the unions, would have in effect recognized unions as the sole spokesmen for Federal employees. Committee action on the legislation was deferred until the second session.

Consultants, meanwhile, faced an attack of their own—an attack aimed directly at their pocketbooks. The attack cropped up on several

Status Report of Major Engineering Legislation–86th Congress

LEGISLATION	SIGNIFICANCE	STATUS
Labor Reform	Endangered Engineers' Separate Voting Rights	Safeguards for Engineers Included in Committee Report
Self-Employed Retirement	Would Establish Retirement Program for Self-Employed Consultants	Passed House; Pending in Senate Committee
TVA Engineering Services	Opened Door for TVA Competition with Private Consultants	Bill Amended to Limit TVA Engineering Services to 'Necessary Projects'
Medal of Science	Provides National Recognition for Engineers and Scientists	Enacted into Law
Interior Dept. Appropriation Bill	Limited Fees to Five Per Cent of Construction Cost	Fee Limitation Stricken From Final Version
Proposed Amendment to Civil Service Reorganization Act	Would Recognize Unions as Sole Spokesmen For Federal Employees Including Engineers	Action Deferred Until 1960
Defense Department Appropriation	Limited Per Diem for Consultants to $50	Per Diem Raised to $56.56 on Technicality
Engineers-Scientists Civil Service Classification	Would Provide Separate Pay and Classification For Engineers and Scientists	Pending in Committee; Due for Congressional Study This Fall
Freedom of Association	Would Exclude Sounding Boards From Definition of Labor Organization	Pending in House Committee
Armed Services Procurement Act	Would Authorize Competitive Negotiation Procedures	Pending in Committee
Davis-Bacon Act Amendments	Would Extend Provisions to Engineers, Architects and Draftsmen	Pending in Committee
Department of Science and Technology	Would Centralize Responsibility For Engineering and Scientific Activities	Special Commission Suggested To Study Proposal

NSPE President Harold A. Mosher (right) and Kenneth E. Trombley, director of public relations for the Society, enter the House Committee on Aeronautical and Space Sciences. NSPE presented more than 22,000 words of testimony before a dozen different House and Senate committees during the first session.

different fronts, but all of it centered around criticism that the Government was using too many consultants and was paying them too much.

The House Appropriations Committee brought the criticism into the open when its report on the Interior Department funds for 1960 included a provision limiting engineering and design costs to five per cent of the construction cost of the project.

NSPE along with other groups protested the action, contending that the arbitrary limitation was unrealistic and could result in increased construction costs. The Senate Appropriations Committee accepted this view and eliminated the House-imposed limitation. The Senate's version prevailed in Conference Committee, but not before Rep. Cannon, chairman of the House Appropriations Committee, leveled a new attack on the use and cost of outside engineering firms.

"The Committee is concerned about the increasing practice of contracting survey and design work to private engineering firms," Cannon said in the conference report. "An investigation of the need for and the extent of the practice is being undertaken and it is expected that the Departments involved will be prepared for extensive hearings on this matter in connection with consideration of the 1961 Bill."

Concerned by these Congressional attacks, NSPE's Functional Section for Consulting Engineers has launched a major fact-finding effort through a Task Force on Government Contract Relations headed by L. M. Van Doren, P.E., a consulting engineer in Topeka, Kansas. Van Doren's group is now gathering facts on fees and is preparing a documented study of the entire question of the use of consultants on Government projects. The study, undoubtedly, will serve as a major part of the profession's defense to further attacks which now seem certain to arise in the second session.

A single word—necessary—carried a major point for consultants in the TVA bond revenue bill. At the insistence of NSPE, the Senate Public Works Committee clarified the engineering provisions of the bill making it applicable "only to such NECESSARY work of this nature." This limitation to "necessary work" apparently will discourage TVA engineers from performing engineering services in competition with private consulting firms.

In testimony before the Public Works Committee, NSPE Executive Director Paul H. Robbins cited four specific instances of such competition. "Such extreme or emergency conditions which would justify the assumption of this broad authority by TVA do not exist and thus there can be no justification for the rendition of engineering services by the Federal Government when private firms are available and competent to perform identical work," Robbins told the Committee.

Consultants also continued to push for self-employed retirement legislation as a 2-year grass roots campaign began to show some solid legislative results. The bill sped through the House on an overwhelming voice vote early in the session and was picking up additional strength in the Senate at adjournment. Chances appear bright for the bill to be reported out of the Senate Finance Committee during the next session.

The bill would allow self-employed professional and business men to annually set aside $2,500 or ten per cent of self-employed income, whichever is less, up to a lifetime total of $50,000. Taxes would be deferred until individual retires and starts drawing from funds. The bill is sponsored by Representatives Keogh (D.-N. Y.) and Simpson (R.-Pa.) and Senators Morton (R.-Ky.) and Smathers (D.-Fla.).

Also bottled in committee at the end of the session was NSPE endorsed legislation designed to give Government engineers and scientists separate classification and pay schedules. Four separate bills dealing with the subject were pending when Congress adjourned.

The question may get attention later this fall when Rep. Tom Murray of the House Civil Service Committee conducts a full-scale investigation of the entire classification act. Findings of the investigation presumably will be reported when Congress comes back to work in January.

In one of the last acts of the session, Congress gave approval for a national program to recognize outstanding individual contributions in the field of engineering and science. The legislation authorizes the President to name not more than twenty individuals annually to receive a National Medal of Science in recognition for outstanding engineering and scientific achievements.

An NSPE-supported proposal, the Keogh-Simpson self-employed retirement bill, threw a spotlight on the Internal Revenue Bureau during the first session. The bill would allow self-employed professional and business people to set aside up to $2,500 of their income each year as a retirement fund. Taxes would be deferred until the individual retired and started drawing on the funds.

Milton F. Lunch (seated), NSPE legislative counsel, and Stanley H. Stearman, assistant legislative counsel, discuss the progress of engineering legislation in the first half of the 86th Congress. The two staff members kept a close check on a variety of legislation ranging from labor reform to the problem of engineering fees.

NSPE questioned the advisability of another bill which would establish a Cabinet-level Department of Science and Technology designed to further coordination of engineering and scientific activities of the Federal Government. The bill was still in committee at the end of the session. However, the committee did report favorably on a suggestion to establish a commission to study the problem.

In testimony before the Senate Committee on Government Operations, NSPE agreed that such a Cabinet-level Department would improve the prestige and status for engineers and scientists but said that this justification alone is insufficient to warrant its creation.

"It is entirely possible that a Department of Science and Technology could unintentionally hinder increased emphasis and support for technological activity by the Government by creating an atmosphere in which technology is regarded as the substance, rather than the servant or 'means to the end' of a more readily understandable national objective such as an atomic powered space vehicle," NSPE told the Committee.

In addition to these specific items of engineering legislation, there were broader areas which also touched the profession.

Many engineers followed closely the course of the gasoline tax bill which provided funds to keep the interstate highway program going for the next two years. The bill, passed in the last days of the session, provides for a one cent increase in the Federal gasoline tax effective immediately and continuing through June 30, 1961. Passage of the bill clears the way for apportionment of $1.8 billion for fiscal 1961 interstate work.

Technical assistance—the principal engineering area in foreign aid—got $179,500 in the Mutual Security Act appropriation which passed on the final day of the session.

Various public works projects scattered across the country got $1,185,309 after Congress voted to override President Eisenhower's veto.—End.

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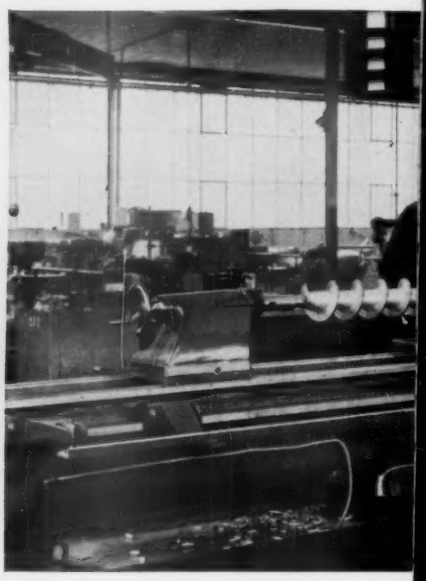

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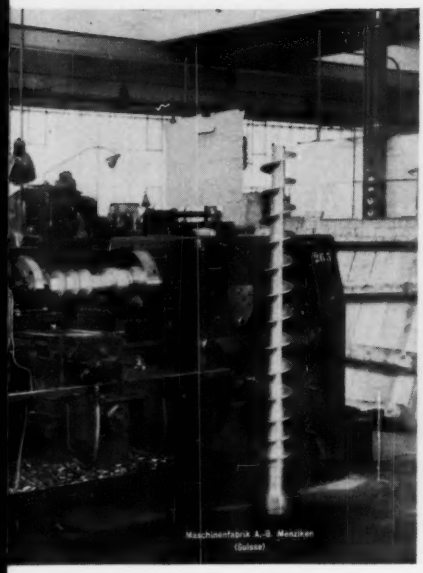
SWITZERLAND is a tiny mountainous country only about half the size of the State of Maine but in engineering it can qualify as one of the giants.

The Swiss have only 16,000 square miles of land area and are almost completely devoid of vital raw materials, yet they always have been one of the brightest spots in a mottled European economic picture.

How do they do it?

Two words—engineering and craftsmanship—must certainly be considered the major factor in this European economic marvel. The phrase "Made in Switzerland" is a world-wide symbol for high engineering quality and craftmanship —a fact which has made the Swiss, on a per capita basis, one of the leading countries in international trade.

Since the signing of the Treaty of Friendship and Commerce between Switzerland and the United States in 1850, the two countries have been important trade partners. Not only in the trade channels, but in the exchange of information and techniques as well as the export of outstanding scientists and engineers, the two countries have enjoyed a long period of international cooperation. Today, with engineering and science becoming increasingly vital in both countries,



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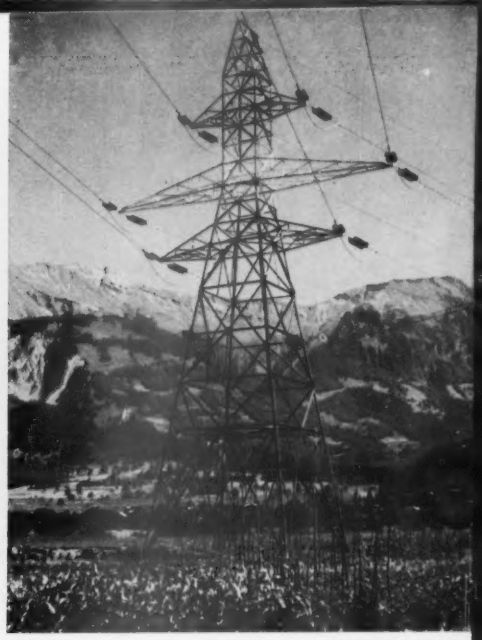

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the cooperation is taking on new meaning.

In recognition of these new needs, the Swiss government this year created for the first time, an opening for a scientific attache with its embassy in Washington. The new post has been filled by Dr. U. W. Hochstrasser, a Swiss physicist and mathematician who has been serving as director of the Computation Center and associate professor of mathematics at the University of Kansas.

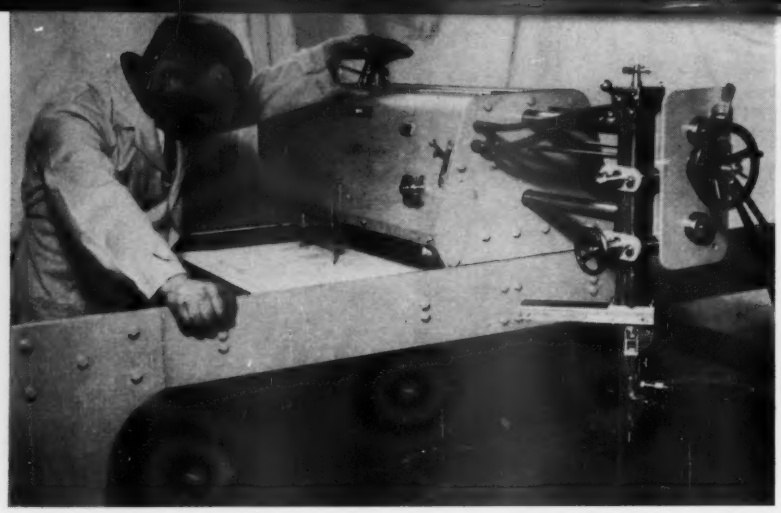
Dr. Hochstrasser is a firm believer in free international exchange of engineering and scientific advances. And he has some definite ideas on how the U. S. and Switzerland might improve their cooperation in this area. One possibility Dr. Hochstrasser sees is for an exchange of outstanding young engineers in the two countries. Such an exchange, Dr. Hochstrasser believes, would afford the budding engineers a chance to complete and broaden their education and at the same time perform useful engineering tasks in the host country. Dr. Hochtrasser also thinks both countries could benefit from an expanded exchange of research information particularly in such complex fields as the development of atomic energy for peaceful purposes.

1. A typical scene in a machine shop in Switzerland. Industry employs about fifty-two per cent of the Swiss working force; 2. Swiss engineering students take a firsthand look at a power plant; 3. A Swiss-made diesel railroad car being loaded for shipment to Argentina; 4. The Rhine inland port at Basel is Switzerland's link with ports on the North Sea. The country has no seaports of its own; 5. A pipe is transported on a special cable railway for emplacement in the Sulzer pipeline. Overcoming the difficulties of the mountainous terrain is one of the big challenges for the civil engineer in Switzerland; 6. A workman cuts a transport worm out of a full bar of aluminium on a lathe equipped with a hydraulic copying attachment; 7. Water—Switzerland's only major raw material—has been utilized to the fullest in the development of hydro-electric power, and 8. Power lines, testifying to the country's extensive hydro-electric development, dot the countryside.

Engineering— The Swiss Word for Success

The Engineer at Work

A Swiss watchmaker performing his exacting task. Watchmaking is one of the country's leading industries and accounts for nearly half of the Swiss exports to the U. S.

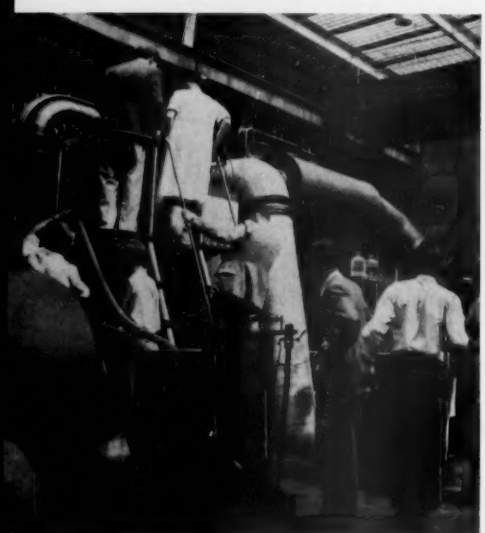


Switzerland prides itself on the production of machine tools. Here a Swiss workman uses an automatic cutting machine.

The Swiss are leaders in the manufacture of electrical equipment. Here is part of their overhead network of power lines which sweep across the Alps.

A glance at the Swiss economic and educational progress makes it quite plain that Switzerland would have a great deal to offer in any trading of engineering and scientific information. For its skills in these areas are evident throughout the Swiss economy — an economy which today provides virtually full employment without any form of outside financial aid.

Unlike storybook versions about a land of chocolate and cheese, Switzerland has a surprisingly diverse industrial economy ranging from the delicate art of watchmaking to the manufacture of giant turbines and heavy diesel engines. In a land lacking in raw materials, mass production techniques have never been overly important. Instead most of its industry places a heavy premium on the skill and craftsmanship of the individual worker and, as a result, the majority of the plants are decentralized medium sized operations. There has been, however, a growing trend in some industries to incorporate certain phases of automation into their processes.



Engineering students attending laboratory work at the Federal Institute of Technology in Zurich. The Institute and the University of Lausanne are Switzerland's two engineering schools. In addition, there are a number of technical institutes.

INDUSTRY employs about 1,160,760 workers—slightly more than fifty-two per cent of the country's total work force. These workers are fairly well distributed over eight major segments of the Swiss economy. The building industry with 212,196 workers is the biggest employer with machine and electrical equipment manufacture following closely with 187,812 employees. Others include clothing and shoes, 91,509; metallurgical industry 134,268; food and canning 94,339; textiles 82,142; watchmaking 68,262, and the chemical industry 40,948.

Much of Switzerland's industrial success and certainly a great deal of its economic independence has been maintained through a tremendous development of its water resources—the only major raw material in the country. The Swiss countryside is dotted with hydro-electric dam projects and giant networks of transmission lines, testifying to the country's advanced state of hydraulic resource development.

Many of the Swiss engineers are now engaged in a new cycle of hydro-electric development which is expected to bring virtually 100 per cent utilization of all the nation's water resources within the

(Continued on page 41)

FROM WASHINGTON

BY
MILTON F. LUNCH,
N.S.P.E.'s Legislative Counsel

CONGRESS LEAVES, KHRUSHCHEV ARRIVES, THE NATION WAITS

THE two major events in Washington during the past few weeks were clearly the adjournment of Congress and the arrival of Soviet Premier Nikita Khrushchev. Between the usual post-session appraisals of the record of the first session of the 86th Congress, and the headline reports of the doings of the Russian visitor there has been room in the press for little else. Both of these historical events will call for studied and deliberate analysis in the months ahead. Not so unusual these days, either, the relative role of professional engineering will be a large factor in the weighing.

It was obvious as Mr. K. made his grand tour of the U.S. that his "message" to the American people was that the Soviets are confident they will catch up and overtake the United States in the area of economic development, and that this will be accomplished through the new Russian revolution—the revolution of technology. Based on this theme, the Soviet leader boasted of Russia's moon shoot, atomic ice breakers, Soviet missiles and the speed with which be can return to Russia in Russian-designed and built aircraft. In short, Premier Khrushchev has thrown down the gauntlet of Soviet-U.S. technological competition.

In his first address to the American people—at the National Press Club—he made his point obviously and dramatically. As described by nationally-syndicated columnist Marquis Childs:

> *It was drama of a high order when his Minister of Higher Education, Vyacheslav P. Yelyutin, one of the official party, rose from the audience at the height of the Khrushchev peroration to supply figures on the number of engineers being graduated every year. Yelyutin put the total at 106,000 a year. Three times as many as you, said Khrushchev, his voice rising in triumph.*

Just a few days before the Khrushchev boast about his army of engineers, Senate Majority Leader Lyndon Johnson of Texas introduced a bill of more than usual significance on a subject which took a back seat in the recent congressional session—education. The Senate leader prefaced the introduction of his bill with the statement that the Soviet moon shot underscored "the significant fact that there are fields of science in which we have been bested, and we have a lot of catching up to do. We had better do it."

The Johnson bill calls for insurance by the Federal Government of loans to college students, on the model of FHA

"If There Are 50 States Why Does Everybody Keep Saying He's From Missouri?"

—Reprinted by permission of St. Louis *Post-Dispatch*

mortgage insurance. This would be in contrast to the loan program now in operation under the National Defense Education Act which provides direct Federal funds. The proposed loans from private financial institutions would be backed by the Federal Government 100 per cent, up to $1,000 in any one year and up to a total of $4,000. The total authorization would be for $100 million of insurance per year. Thus, up to 100,000 students a year could possibly qualify for educational loans.

◄ Senator Yarborough

Secretary Flemming ►

Secretary of Health, Education, and Welfare Arthur S. Flemming reports that preliminary estimates show as many as 121,000 students in 1372 colleges would like to take advantage of the government loans. The average loan request is about $500. At the start of the new school year, about $15 million was on hand from last year and another $30 million is available in new funds. Flemming acknowledges that this might leave the fund some $11 million short of need, but adds that Congress will be asked for additional funds if this proves to be the case.

In supporting his Texas colleague's loan bill, Senator Ralph W. Yarborough charged that Flemming's department had made the program less effective by asking the colleges to cut down on the amount of money requested for the loan fund, and then taking the low figures to Congress and stating the colleges do not need as much money as originally estimated.

The Johnson bill is important in and of itself in terms of the impact on educational goals and opportunities. This importance is bound to be increased in the next session in the light of the Soviet head's boast about the number of engineers being graduated in Russia. If the Johnson loan insurance bill receives active consideration in the next session, as seems most probable in view of the position of the author and the initial support by a number of other senators, we may see a renewal of the early post-Sputnik Congressional fever for a new numbers competition with Russia with emphasis on quantity of engineers and scientists.

Of more long-range significance is the broader question of national policy in terms of what has been called "a growing economy." While Khrushchev makes proud boasts of the Soviet's expanding economy, many U.S. political leaders have been increasingly critical of a program which they feel holds the economic line, more or less, but does not push into new areas of economic growth. The noted columnist, Walter Lippmann, has articulated this idea and has been widely quoted in political circles. Here could be the dominant note of the second session of Congress and of the ensuing presidential election campaign.

Critics who take this line illustrate their point generally with such examples as the elimination of funds for college classrooms, laboratories and libraries, and reduction of funds for college housing, in the face of an anticipated huge increase in college enrollment; Administration efforts to scuttle grants in aid to communities for new sewage treatment plants; deferment of new starts in public works projects; the cutback in funds for urban renewal programs, and public housing.

The point is more than whether any or all of this type of Federal activity is sound or not—certainly all of it is highly debatable. Behind the merit or lack of merit of each of the examples is the fundamental question of the degree of Federal participation or stimulation which should be given to the private economy of the nation. Most economists agree that the U.S. economic growth rate has slowed down, but there is little, if any, agreement on the reasons.

Those who adhere to the Lippman thesis hold that the nation has lost its sense of national goals, its mission to move ahead, while the Russians are imbued with the spirit of national goals and mission. They say that the way to restore the "drive" is to launch an all-out attack on the problems of education, slums, water supply, community facilities, scientific and medical research, and a host of other items, depending on the interests of the persons making the suggestions.

If the Khrushchev visit did nothing else, it served, even if indirectly, in focusing the spotlight on the emergent and dominant role of technology as the vital and controlling factor of the political, social and economic future. Whether willingly or not, the engineer and scientist is being weighted with responsibility for more than his own technical contribution. At the present rate of technological involvement in the nontechnical affairs of the nation and the world, we may some day anticipate the political parties turning to engineers and scientists as their candidates for political office on the ground that only such technically trained persons can cope with the technologically-oriented problems that beset mankind.

Ethics—
Professional Bulwark

Mr. Paist

By

STANLEY S. PAIST, JR., P.E.

Chairman, Ethics and Practice Committee, Philadelphia Chapter and Pennsylvania Society of Professional Engineers

As members of the National Society of Professional Engineers we must believe the term "professional engineer" is accurate and descriptive; a title with which we are proud or, at the very least, willing to be identified. We accept this term readily and it is to be assumed that its meaning and connotations are clear.

The dictionary provides the concept that a "profession" is a public avowal or claim. It identifies the adjective "professional" as characteristic of or conforming to the technical and ethical standards of a profession or occupation.

Most states have laws which aid the practice of engineering by restricting the use of "engineer" in public advertising unless the user is qualified technically. These laws make "public avowal" an apt concept and give credence to that part of the definition where "professional" is defined as characteristic of or conforming to technical standards. These laws are basic to the *practice* of engineering but they are not basic to the *ethics* of engineering. Ethics is the single ingredient in the above definitions for which state laws do not provide. Engineers, as a group and as individuals, provide ethics. And since ethics is defined as moral duty and the science of ideal human behavior, a professional engineer finds himself defined technically and publicly by law and defined ethically by his own ideas of moral duty and ideal human behavior.

Although professional engineers recognize the importance of ethics and practices and are aware that this is an area primarily for individual effort, our desire to avoid personal involvement, especially with the science of ideal human behavior, is quite strong. Consequently, we employ a time-worn palliative, used by other human beings faced with a similar circumstance, and establish a committee to "handle" our ethics and practice problems for us.

State and local chapters have standing ethics and practice committees. These dedicated committees are continually at work minimizing the potential harm to our professional name, to say nothing of the potential damage to a defrauded public, by searching out those people who, despite the law, continue to advertise themselves and practice, illegally, as engineers. Needless to say, these committees will be all the more effective if they ferret out malpractices from a base as broad as the observant eyes and ears of the 50,000 members of the National Society of Professional Engineers can make it.

Discovering and then educating or prosecuting offenders of state registration laws requires the patience of Job and the tenacity of Dickens' Madame Defarge. However, this work has a certain "black" or "white" characteristic and may be supported by possible legal prosecution. These law-provided aspects mark the typical practice type of problem and make it different and easier to solve than an ethical problem with its inherent shades of "grey" and lack of provable wrongdoing. While problems involving practice arise almost wholly within the category of the professional engineer's relations with the public, ethical problems do not. They arise not only in the category of the professional engineer's relation with the public, but also in the much more contentious and explosive realm of the professional engineer versus professional engineer.

If our Society is to grow well and be under the tongue of good report in all quarters, no one of us can shirk the troublesome area of professional ethics. Here, the thoughtful action of each of our 50,000 members is required.

The National Society and all state and local chapters cannot function without a code of ethics, either written or unwritten. Such a code is the *sine qua non* of our Society.

Admittedly, ethics are difficult

(Continued on page 42)

Strictly Business

Personalities . . . **B. G. Stoops,** assistant chief engineer at **Rockwell Manufacturing Company's** Instrument Division in Tulsa, Okla., has been promoted to chief products engineer . . . The appointment of **Saul Neufeld** as executive engineer in charge of the Miami, Fla., office of **Sidney W. Barbanel, Consulting Engineer,** has been announced . . . **Dr. Thomas H. Chilton,** technical adviser to **Du Pont's** Engineering Department, Wilmington, Del., has retired from the company after a 34-year career . . . **Clement Dinon,** president of **Lucifer Furnaces, Inc.,** has announced the appointment of **John J. Shingle** to the position of chief engineer . . . The appointment of **Robert A. Smith** as technical liaison engineer for Buffalo, N.Y., Operations of **Sylvania Electronics Systems,** a division of **Sylvania Electric Products Inc.,** has been announced . . . **Roy G. Knutson** has been named manager of advanced engineering for **Autonetics,** a division of **North American Aviation, Inc.,** Downey, Calif. . . . **Ralston E. Bates** has joined the technical staff of the **Leach Corporation's** Relay Division, Los Angeles, Calif., as senior design engineer, it has been announced by **Marvin G. Nelsen,** chief engineer.

Mr. Stoops

David M. Checkley, formerly general manager of the Industrial Engineering Division of **Arthur G. McKee & Company,** Cleveland, Ohio, has been named president of **Vitro Engineering Company,** New York, N.Y., a division of **Vitro Corporation of America** . . . **Charles B. Lee** has joined the staff of **Control Data Corporation,** Minneapolis, Minn,. as director of engineering for the Cedar Engineering Division . . . The appointment of **Dr. Joseph Kukel** to the new position of chief engineer, instruments and systems, has been announced by **Jack H. Zillman,** vice president and general manager of the **Daystrom** Pacific Division of **Daystrom, Inc.,** Los Angeles, Calif. . . . **Gilbert R. Odom** has been named manager of the Engineering Control Department at **Raytheon Company's** Missile Systems Division plant at Andover, Mass. . . . The **Portland Cement Association** has announced the appointment of **Alan C. Carter** as Salt Lake City district engineer . . . Three vice presidents of **American Photocopy Equipment Company** have been announced by **Samuel Rautbord,** president of the Evanston, Ill., firm. They are: **Leo J. Stuckens,** director of photographic products, with headquarters in Evanston; **Edwin A. Matousek,** general manager, Photo Paper Products Division, St. Louis, Mo., and **Francis D. Maio,** general manager of APECO of Canada, Ltd., Toronto.

Dr. Kukel

Alex Hossack has been promoted to chief engineer in the Products Engineering Division of **Simmonds Aerocessories, Inc.,** Tarrytown, N.Y. . . . **C. E. Deardorff** has joined **Southwestern Industries, Inc.,** Los Angeles, Calif., as chief engineer . . . **H. E. Bovay, Jr., Consulting Engineers,** has announced the promotion of **Morris Backer** to the position of associate in the firm, which has its home office in Houston, Tex. . . . **C. T. DuBreuil** has been named vice president and chief engineer for **The Fyr-Fyter Company,** Dayton, Ohio . . . **Theodore E. Casselman, Jr.,** assistant engineering manager in the Boston office of **Stone & Webster Engineering Corporation,** has been named manager of the New York office . . . **Dravo Corporation,** Pittsburgh, Pa., has announced the appointment of **William L. Price** as manager of engineering and materials for the firm's Keyston Division . . . **Alfred K. Allen** has been named executive vice president of **Folmar & Flinn Industries, Inc.,** Montgomery, Ala. . . . The promotion of three executives in the Engineering Department of **Mack Trucks, Inc.,** Allentown, Pa., has been announced. **Laurence E. Burgess** has been named chief engineer of off-highway trucks; **Gerald E. Mintz** has been appointed chief engineer-buses, and **Franklin R. Nail** has become chief engineer-trucks.

Mr. Backer

Thomas B. Rhines has been promoted to the position of assistant engineering manager and **Donald G. Richards** to chief engineer at **Hamilton Standard,** a division of **United Aircraft Corporation,** Windsor Locks, Conn. . . . **Richard M. Reisel** has been appointed engineer in charge of the Commercial Crane and Excavator Division of the **Bucyrus-Erie Company,** South Milwaukee, Wis. . . . The appointment of **Thomas W. Morrison** as director of engineering and research for **SKF Industries, Inc.,** Philadelphia, Pa., has been announced by **E. R. Broden,** president . . . **Walter Ware Slocum** has been appointed president of **International Resistance Company,** Philadelphia, Pa. . . . **Tower Iron Works Inc.,** Providence, R. I., has announced the appointment of **Norman H. Parker** as manager of the Industrial Division . . . **Charles F. Simmers** has been named assistant chief engineer in the Engineering and Construction Division of **Koppers Company, Inc.,** Pittsburgh, Pa.

Mr. Morrison

Will Engineering Advances Reduce Our Traffic Deaths?

FROM Henry Ford's Tin Lizzie to glittering four-wheel wonders of 1960, the automobile has been one of the most obvious symbols of American engineering knowledge.

Today the driver of even the cheapest models enjoys comfort and performance never dreamed of when the first Model T rolled off the production line at Dearborn.

Unfortunately, this same shiny engineering symbol of Americana is the vehicle in which 35,000 Americans die each year and in which another million are maimed and injured. Aside from the obvious personal tragedies involved, highway accidents are claiming a terrific toll in property and manpower each year.

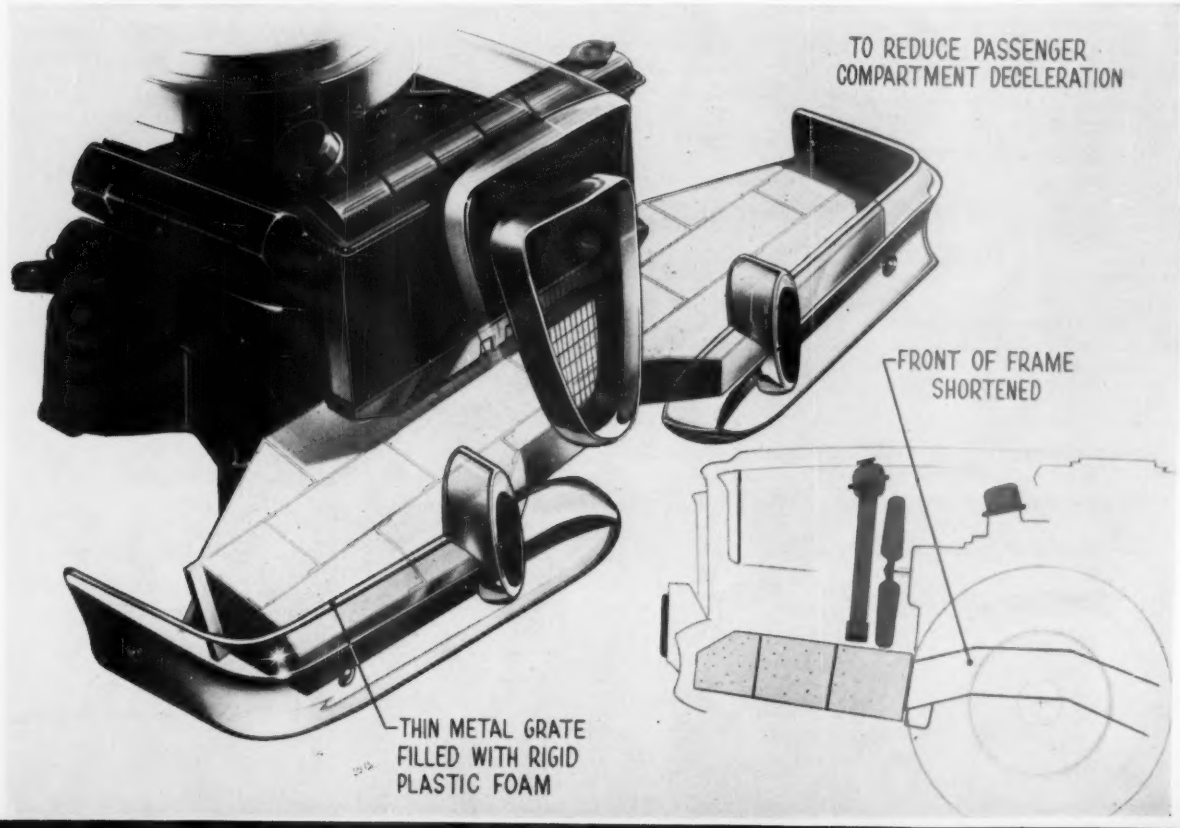
The nation's bill for its motor vehicle accidents is now estimated at between five and seven billion dollars annually. But, these dollar and cents figures pale beside tabulations of the manpower losses. In 1957 alone more than thirty-two million man-days and two million school-days were lost because of injuries suffered in auto crashes. The fact that 35,000 lives are lost annually is stark testimony to the seriousness of the problem, but it is even more tragic when it is considered that an unusually high percentage of these deaths fall in the fifteen to twenty-four year age group. For example, of all the young men who died in this age group in 1957, forty per cent were killed in motor-vehicle accidents.

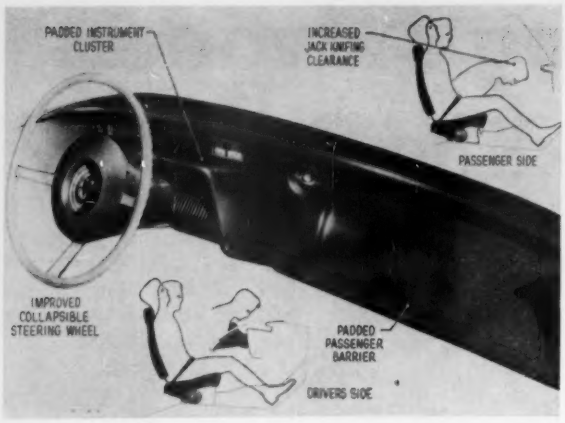
Dulled by endless slogans and constant recitation of holiday traffic statistics, the American public has been slow to comprehend the seriousness of the highway death and injury problem. Many simply take fatalistic attitude that death and injury are the inevitable by-products of a mass transportation system.

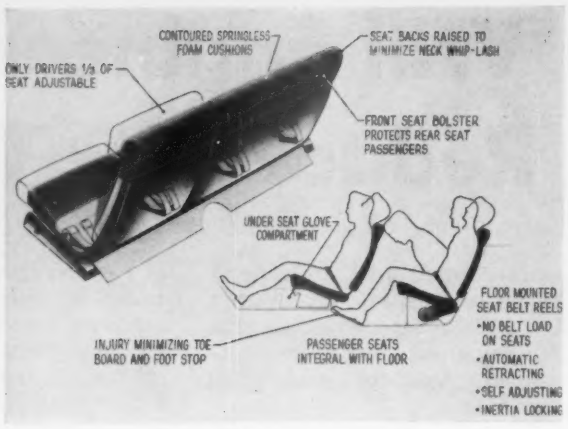
Behind this wall of indifference, engineers and public health authorities have been working quietly on the problem and have come up with some impressive evidence to discredit any such fatalistic notions. While accidents themselves may never be totally preventable, the work of this dedicated band of professionals is holding out hope that automobile passengers can successfully survive many of the crashes which are today sending thousands to hospital emergency rooms.

Much of this hope centers around a rather simple sounding term, "passenger packaging." This idea is

Here is a front view of an experimental safety car recently developed for evaluation purposes by engineers at the Ford Motor Company. The car contains a crash-absorbent front structure designed to absorb force of head-on collisions. Other views of the model showing more safety features are on pages 32 and 33.


TO REDUCE PASSENGER COMPARTMENT DECELERATION
FRONT OF FRAME SHORTENED
THIN METAL GRATE FILLED WITH RIGID PLASTIC FOAM




CONTOURED SPRINGLESS FOAM CUSHIONS
SEAT BACKS RAISED TO MINIMIZE NECK WHIP-LASH
ONLY DRIVERS 1/3 OF SEAT ADJUSTABLE
FRONT SEAT BOLSTER PROTECTS REAR SEAT PASSENGERS
UNDER SEAT GLOVE COMPARTMENT
FLOOR MOUNTED SEAT BELT REELS
•NO BELT LOAD ON SEATS
•AUTOMATIC RETRACTING
•SELF ADJUSTING
•INERTIA LOCKING
INJURY MINIMIZING TOE BOARD AND FOOT STOP
PASSENGER SEATS INTEGRAL WITH FLOOR

based on the theory that a human being can withstand rather high exposure to impact force providing he is "packaged" in such a manner that he does not strike solid objects. This so-called packaging would, among other things entail the use of seat belts to retain the passenger and the modification of automobile design so as to eliminate objects or surfaces which could become lethal targets in a crash.

Dr. T. P. Wright, an engineer and vice president for research at Cornell University, a leading center for study of crash injuries, recently told a Congressional committee:

"I think its perfectly absurd to pack a delicate vase to send out to the west coast in a way that it will get there and then package, or not package, human cargo that is probably encountering many more hazards. And it just does not make sense to me for a person to go into a lethal weapon if he has a crash without any method of holding him in place or of protecting him against projections or other things he may hit."

BASED on findings by Cornell University and other research groups in and out of the automobile industry, many engineers and medical men have been urging the adoption of a variety of design features which they believe will accomplish this packaging.

Some of the more prominent suggestions that have cropped up again and again in discussions by crash-injury experts include:

• Installation of seat belts as standard equipment in all automobiles.

• Crash padding of the dash, roof, and other interior areas.

• An improved steering wheel and recessed post; perhaps a collapsible assembly.

• Safety door locks on all cars.

• Removal of dangerous knobs, buttons, sharp edges and other gadgets.

• Seats securely anchored to the floor of the car and high enough to avoid "whiplash" injuries.

• Elimination of the deck behind the rear seat as a storage place for objects that become flying missiles in crashes.

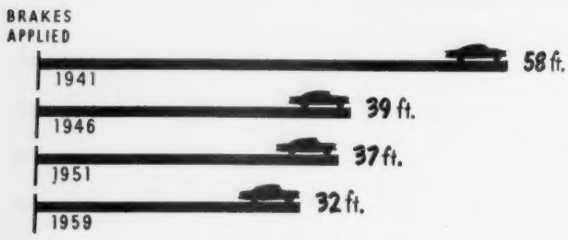
• Elimination of sharp, pointed hood ornaments that might be lethal projections for pedestrians.

• Installation of some type of shock absorbing bumpers which would absorb much of the energy in crashes.

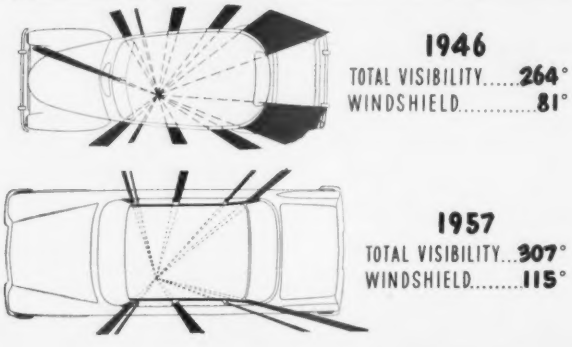
On paper these suggestions all look good but how successful are they in actual practice? People close to the crash-injury research are convinced they have solid evidence that these and other suggested design modifications are successful in reducing injuries.

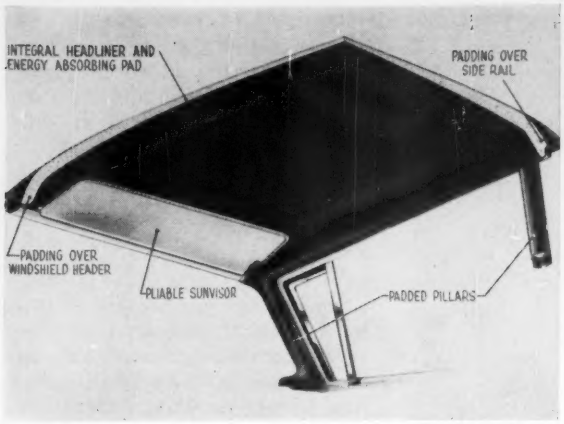
In testifying before the Congressional Committee last July, Cornell's Dr. Wright put it rather emphatically:

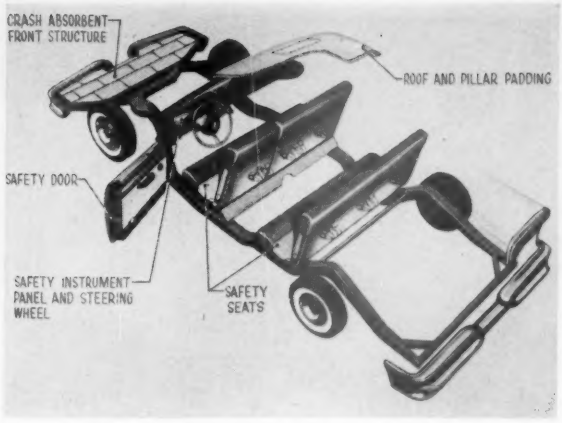
Approximate Distance Required to Stop from 30 MPH with 100 lbs. Pedal Pressure



Driver Horizontal Ability







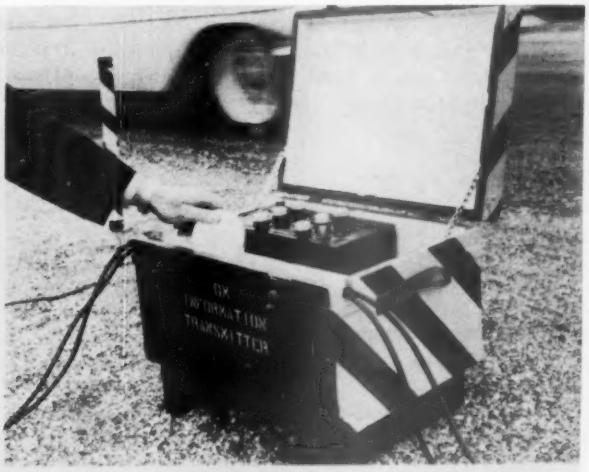
"We believe that the evidence must now be regarded as conclusive: where design and composition have been modified, in accordance with sound scientific investigative data isolating and identifying those areas and components of engineering design which have failed to provide good 'packaging' for living humans in accidents, the result has been an incontrovertible and scientifically measurable decrease in frequencies and risks of injury and fatality. . . ."

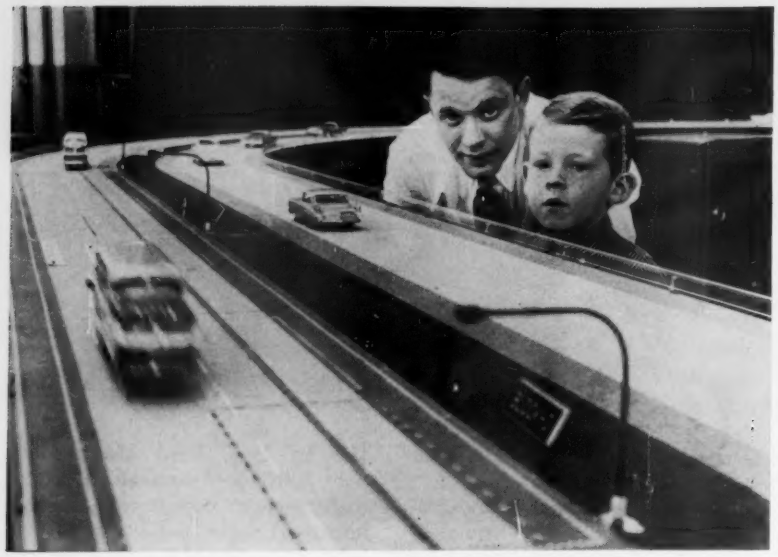
Many of these design modifications, most notably the deep dish steering wheel and safety locks, have already been adopted by the automotive industry. A number of other features such as padding and safety belts are offered largely on an optional basis to the car buyer.

Some of the attempts of industry to install safety features have been met with a cold stare from the public. In 1956, Ford Motor Company introduced a number of safety features—deep dish steering wheels, improved locks, padding and seat belts—and pushed for their acceptance in their advertising copy. The campaign apparently generated little public enthusiasm, and, in fact, some sources believe it actually hurt Ford sales that year.

Safety belts are probably the classic example of the public's indifference to safety features. The vast

As a possible answer to highway safety problems, the General Motors Research Laboratories and Delco Radio Division have developed an experimental low frequency system for sending voice signals from roadside transmitters to standard or special car radio receivers. Purpose of the system would be to give the motorist vocal information he needs for direction and safety information his eyes might miss. At the upper left, a patrolman at an accident scene records warning message on magnetic tape. Taped message (upper right) is inserted in transmitter which automatically broadcasts warning to oncoming drivers through a portable "hang on" unit shown beside the driver's left ear in lower photo.





Will this be the highway of tomorrow? Five-year-old George Roberts looks into the future as he watches model busses operate on a completely automatic model highway which could be a full-sized reality on turnpikes by the time he is old enough to have a car. Each bus contains a package electronics no larger than a transistor radio which receives electrical control signals from wires in the highway. The model was developed by General Motors research engineers as a possible future method of automatically controlling traffic on inter-city and limited access highways.

disinclination of the public to use the belts has discouraged manufacturers from including them as standard equipment in automobiles. Yet, crash-injury experts regard the seat belt as the key to proper packaging of the automobile passenger.

For example, officials at Cornell University believe that proper use of safety belts can, by itself, reduce fatalities by something like sixty per cent.

PROPONENTS of these safety concepts have recently found a new forum through Representative Kenneth A. Roberts of Alabama. As chairman of a House Interstate Commerce subcommittee, Roberts has become one of the strongest advocates of improved safety construction in automobiles.

In opening hearings on the subject this summer, Roberts commented:

"We are doing something about law enforcement. We are doing something about the drunk driver. We are doing something about getting unfit and untrained drivers off the roads. We are doing something about getting unsafe vehicles off the highways. We are not doing enough of course, but progress is being made.

"Many of those who have given thought to this problem believe there is one other area that should receive greater attention. We need safer vehicles . . . In aviation we insist not only that we have well trained and licensed pilots but we insist that planes meet rigid Federal safety standards."

A number of engineers and medical men believe there should be some degree of Federal control over safety design features in automobiles.

One of these is James J. Ryan, professor of mechanical engineering at the University of Minnesota, who has been conducting research on crash injury for the past ten years. Here's the way he views the problem:

"My prediction is that in order to obtain the necessary personal safety in automobiles, it will be necessary for the Federal Government to establish a control agency—such as the FAA for passenger aircraft, and the pure Food and Drug Act for protection against fraudulent drugs and improper foods."

Ryan is convinced that a properly designed safety package can reduce deaths and injuries by fifty per cent. In July he told the Roberts subcommittee that a national law should spell out the need for seat belts, hydraulic shock-absorbing bumpers, retractible steering wheel, recessed dash and seat absorbers as a unit.

During the course of his research, Ryan has had a great deal of first-hand contact with some of these safety features, particularly the hydraulic bumper. At the third annual Stapp Automotive Crash and Field Demonstration at Alamogordo, N. Mex., Ryan and a graduate engineering student drove a hydraulic bumper-equipped automobile into a solid barricade at twenty miles an hour with no injuries to passengers or the car. With additional refinements, Ryan believes the speed may be increased to forty miles an hour with only superficial injury to the passengers.

Another leader in the field of crash-injury research has been Col. John Stapp of the Aero Medical Laboratory at Wright Air Force Base. He is considered an outstanding expert on the question of how much force the human body can tolerate and long has been a leader in air and ground safety programs.

BASED on his extensive experiments, Col. Stapp recommends four major steps for achieving ground vehicle safety. They include (1) that the passenger or driver occupy a seat high enough to provide head rests and thus protect the head and neck from backward force, from aft and decelerating force; (2) that the seat and its attachments, whether they be movable or fixed, have a strength to be retained in the locked position in the vehicle and not tear loose and throw the occupant against the forward part of the vehicle; (3) that lap belts be provided which will sustain at least 5,000 pounds of decelerative force or restrain the occupants at 5,000 pound force, and (4) that means of further attenuation of force be provided in the form of energy absorbing bumpers or energy absorbing fastenings for the seat to move a little against resistance and thereby take up force as much as possible.

(Continued on page 41)

New Literature

FILTERING—Answers to such questions as "What does filtering really cost me?" are provided in an 8-page booklet entitled "Three Questions" recently prepared by Caterpillar Tractor Company. The two other questions asked and answered are "Aren't all elements about the same?" and "Honestly, how often should elements be changed?" Filtering costs, the booklet explains, depend on the quality of the element. Poorly designed and "cost-cutting" substitute filters often will cost more in the long run than those recommended by the equipment manufacturers. Major reason for this, the book points out, is that the substitutes generally have to be changed more frequently than is necessary with the recommended unit. Also, the one that is "just as good" often does not take out all the abrasive and engine-harming materials. Elements should be changed, the book says, when the filter's dirt-holding capacity has been reached. Plugged air-cleaner elements, for example, indicate need for a change by causing excessive engine exhaust smoke and loss of power. Filter elements clogged by dirty fuel are indicated on Cat-built equipment by the fuel pressure gauge, which shows lower pressures as the element fills with dirt.

(Circle 15 in Readers' Service Dept.)

REFERENCE—A handy catalog and ready reference chart for architects, engineers, draftsmen, designers, artists, machinists, instructors, surveyors and students is offered by Alvin and Company, Inc., to let you easily find all your professional and technical needs. The large, indexed catalog is fully illustrated and contains clear descriptions of every product. It exhibits a complete line of drawing sets and equipment, instruments and materials, designing aids and measuring devices. It can be hung on the wall over a desk or table for quick ready reference. It contains many handy charts such as fraction-decimal equivalents, architect symbols, tap drill sizes for drawing standard identification lines and nut and bolt, wire, cap, and screw specifications.

(Circle 16 in Readers' Service Dept.)

PUMP MOTORS—Illustrated in full color, a brochure on its completely new Holloshaft Turbine Pump Motors for outdoor service is announced by U.S. Electrical Motors, Inc., The

cover of the new brochure shows the Holloshaft motor pumping under storm conditions, and the first inside spread is devoted to a large, easily-read cutaway view of the motor, with call-outs to the principal features. The copy explains the story behind the new Holloshaft, and the principles of its design in which a relationship between form and function is introduced for the first time by U.S. design engineers. Throughout the brochure, new design features—such as the U.S. Lubriscope fast oil-filling lubrication system—are fully illustrated and explained.

(Circle 17 in Readers' Service Dept.)

BUYING GUIDE—A specially prepared catalog which lists engineering equipment and supplies for student engineers has been released by the Keuffel & Esser Company. Titled "Your K&E College Buying Guide," the 28-page, illustrated booklet presents information and order numbers on slide rules, drawing instruments, drafting supplies, drawing and tracing papers, graph sheets and lettering sets. The booklet is designed in particular to provide freshmen students with facts on their current and future engineering needs.

(Circle 18 in Readers' Service Dept.)

CONCRETE PAVEMENT—Engineers responsible for the construction of airfields, highways, streets and other pavements will find the newly revised "Concrete Pavement Inspector's Manual" quite valuable. The duties of the concrete pavement inspector are discussed in considerable detail in this book. Also set forth are the proper adjustment and use of mechanical and hand equipment to get a good job done. There are five chapters of text. Following these there is a list of items that should be checked before and during construction. The manual is published by the Portland Cement Association.

(Circle 19 in Readers' Service Dept.)

SPRAWLER—A new 2-color bulletin illustrating and describing the 545 "Sprawler"—a crane-excavator able to lift more than its own weight—is now available from the Koehring Division of Koehring Company. The 8-page bulletin makes good use of line drawings to illustrate the "how-it-works" principle of the "Sprawler" and to show simple, direct power flow of the main machinery. Various machinery features—two major shafts, enclosed gears, adjustable conical hook rollers, etc.—are described and illustrated. How the "Sprawler" strips down for easy transportability is discussed on one of the pages.

(Circle 20 in Readers' Service Dept.)

SPEED REDUCERS—Two new booklets containing detailed engineering data on Hewitt-Robins shaft-mounted, in-line helical and right-angle helical speed reducers are now available from the company. Each booklet contains twenty-four pages of rating tables, selection procedures and other technical data useful to engineers specifying power transmission machinery. Booklet No. J-19 covers shaft-mounted reducers and No. J-18 deals with in-line and right-angle helical drives.

(Circle 21 in Readers' Service Dept.)

These listings are informational only and are not an endorsement of the products, nor of the manufacturer's claims. To receive any of the new literature described in this column, merely circle the item number in the Readers' Service Dept. and mail to AMERICAN ENGINEER.

Promotional Aids for

NATIONAL ENGINEERS' WEEK

HERE ARE the basic promotional aids on which to build your Engineers' Week program. These items will give your program coverage in local newspapers, on radio and TV stations, and in civic and group displays. Use these promotional materials to show how engineering progress will affect the decade of the 1960's.

1 ***TV Spot Films:*** A set of three 1-minute and two 20-second TV films dramatizing the theme of the 1960 National Engineers' Week. Produced to meet network standards, the films call attention to the role of the engineer in building for progress through the coming decade. Each film qualified for public service TV time during station breaks. A set of these five films will reach your largest Engineers' Week audience. Price: Set of five films, $25.

2 ***"Engineering's Great Challenge—The 1960's:"*** A 15-minute tape recorded radio program dramatizing the contributions engineering will make during the 1960's. Network performers describe engineering achievements in exploring the moon, in building computers, in medical research, in designing new transportation arteries, in structures, and in many other fields. Excellent for use on public service radio time. Price: $6 each.

3 ***Set of Seven TV Slides:*** Obtain extensive TV coverage through the Week with these slides displaying poster-type art work and printed copy calling attention to engineering. May be used during all TV station breaks as public service announcements. Price: $10 per set of 7 slides.

4 ***Tape Recorded Radio Announcements:*** A set of seven 20-second radio spot announcements, made by a network radio and TV announcer. Offers local stations a top-level recording for 20-second station breaks. Price: Set of seven recorded announcements, $3.50.

5 ***Lapel Buttons:*** A high-quality lapel badge with poster design. Each chapter or state society can set its own price for button sales. Prices: 100 to 500—15c each; 500 to 1,000—10c; 1,000 to 3,000—7c; 3,000 to 5,000—5c; and over 5,000—4c.

6 ***Posters:*** Colorful 9 x 11-inch pasteboard posters carrying the 1960 Engineers' Week design and theme. This is the basic promotional item for calling attention to the Week. Use on bulletin boards, in window displays, school exhibits, etc. Large size (18 x 22 inches) also available. Prices: 9 x 11, $4 per 100; 18 x 22, $5 per 100.

7 ***Paper Banners:*** Excellent for display use. Three feet long by 6 inches wide. Has poster design and words "National Engineers' Week" in color. Price: $4 per 100.

8 ***National Engineers' Week Seals:*** Use these brightly colored seals on all office mail from now through February 27. Poster design printed on 1½-inch gummed paper. Price: $3 per 1,000.

9 ***Newspaper mat story on engineering and the exploration of the moon during the 1960's:*** A feature article on how the exploration of our moon will be an engineering accomplishment from the rocket vehicles, through the instruments and structures landed on the lunar surface. Prepared on mat, with illustration, ready for immediate insertion in daily or weekly newspaper. Price .75 each.

10 ***Newspaper mat story on the engineering achievements expected in the decade of the 1960's:*** A feature article on engineering progress, based on the engineering "breakthroughs" of the 1950's. Prepared on mat, with illustration, ready for immediate insertion in daily or weekly newspaper. Price .75 each.

11 ***Logotype:*** A metal cut of a poster design to insert in advertising, special sections of newspapers, industrial house organs, magazines, and other printed matter. All state society and chapter publications should have one. Price: $1 each.

12 ***"Engineering . . . for the Age of Space:"*** A re-issue of the 15-minute tape recorded radio program distributed last year. Excellent for use on public service radio time. Price: $4 each.

→ *Use this coupon to order your aids now!*

National Society of Professional Engineers
2029 K Street, N.W./Washington 6, D. C.

Sirs:

Please rush me items indicated. I enclose a check ☐ money order ☐ in the amount of $.....

I understand remittance must accompany order.

NAME _____
Please Print

ADDRESS _____

CITY _____ STATE _____

1. _____ TV Spot films @ $25 per set.
2. _____ Radio tape "Engineering's Great Challenge—The 1960's" @ $6 each.
3. _____ TV slides: set of 7 slides @ $10 per set.
4. _____ Recorded spot announcements @ $3.50 per set.
5. _____ Lapel buttons: 100-500 @ 15c ea.; 500-1,000 @ 10c ea.; 1,000-3,000 @ 7c ea.; 3,000-5,000 @ 5c ea.; over 5,000 @ 4c ea.
6. _____ Posters: regular size @ $4 per 100.
   _____ Posters: large size @ $5 per 100.
7. _____ Banners @ $4 per 100.
8. _____ Seals @ $3 per 1,000.
9. _____ Newspaper mat stories on engineering and the exploration of the moon @ .75 ea.
10. _____ Newspaper mat stories on engineering achievements in 1960's @ .75 ea.
11. _____ Logotypes @ $1 ea.
12. _____ Radio tapes "Engineering . . . for the Age of Space" @ $4 ea.

NSPE Board to Convene

president of the Ohio Society of

Advance Planning Underway For 1960 Engineers' Week

Advance planning for the tenth annual National Engineers' Week observance got underway throughout the country this month as NSPE affiliates and other engineering groups began committee assignments for local projects.

The 1960 Week, February 21-27, marks the tenth anniversary of NSPE sponsorship. In the years since the first observance in 1951 with a handful of local chapters having organized community programs, the Week has grown to a major annual public relations activity featuring extensive newspaper, radio and TV coverage, career conferences for high school students, talks by engineers before civic groups, banquets, scholarship awards, exhibits, film showings, and a variety of other projects.

A number of outstanding engineers in industry, education, the military services, and private practice have agreed to act as sponsors for the 1960 Week. The sponsors include: T. Keith Glennan administrator, National Aeronautics & Space Administration; Allen B. DuMont, chairman of the board, Allen B. DuMont Laboratories, Inc.; James R. Killian, Jr., chairman of the corporation, Massachusetts Institute of Technology; David B. Steinman, consulting engineer; Clarence H. Linder, vice president, General Electric Company; Bertram D. Tallamy, Federal Highway Administrator; Charles Allen Thomas, president, Monsanto Chemical Company; John L. Burns, president, Radio Corporation of America, and Philip Sporn, president, American Electric Power Company, Inc. A complete listing of the 1960 sponsors will appear in the November issue of the AMERICAN ENGINEER.

National Chairman for the 1960 Week is Belton Y. Cooper, of Birmingham, Alabama, a design engineer for U. S. Pipe & Foundry Company. Serving on the Engineers' Week Committee are A. C. Bullen, Jr., Honolulu, Hawaii; J. Raymond Carroll, Urbana, Illinois; C. C. Hallvik, Boise, Idaho; and Lawrence E. Miller, Omaha, Nebraska.

The theme for the 1960 observance is "Engineering's Great Challenge—The 1960's." The basic poster design for the 1960 Week features a photograph of the half moon taken with the 100-inch telescope on Mount Wilson in California. The poster design utilizes the moon as a symbol of one of the great challenges which the engineering profession will face during the decade of the 1960's. Promotional material distributed by the National Society will emphasize the engineering contributions to placing satellites around the moon, landing objects on the lunar surface, and developing and carrying out the work necessary to ultimately land man himself on the moon and bring him back to earth. This promotional material will also emphasize a listing of other engineering challenges in the coming decade in the fields of transportation, structures, electronics, chemistry, automation, and nucleonics.

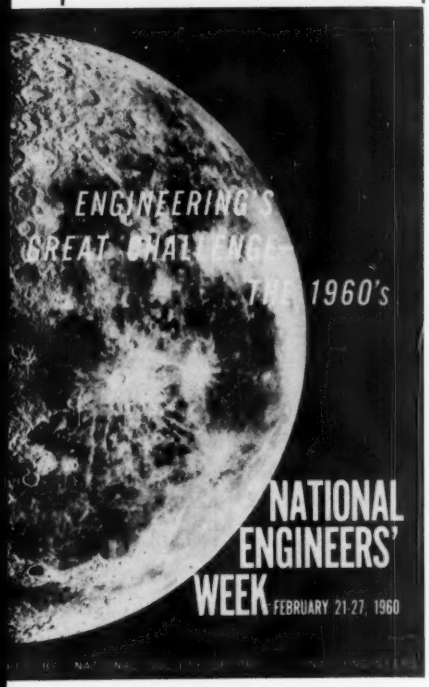
Belton Y. Cooper

Promotional kits for the Week have been sent to all NSPE state and local groups this month. The kits contain suggestions for working out a basic Engineers' Week program at the chapter level concerning such activities as organizing speakers' bureaus, obtaining newspaper publicity, setting up exhibits, and getting radio and TV coverage. One section in the kits contains samples of actual newspaper sections on engineering obtained by local chapters during the 1959 observance.

The first in a series of "Action Letters" on the 1960 Week will be mailed from the National Society this month. The series will offer suggestions for local Engineers' Week programs.

Promotional aids for the 1960 Week are now available from the National Society headquarters.

EW Poster Design



NSPE Board to Convene in Pittsburgh, October 15-17

The NSPE Board of Directors will convene in Pittsburgh this month for their final session of the year. The fall meeting dates are October 15-17—and a varied program is planned.

Registration at the Penn-Sheraton Hotel will begin at 10 a.m. Thursday, October 15. Board members who have not returned their advance registration card as yet have been urged to do so as soon as possible.

Highlight of the meeting will be the presentation of the first NSPE charter to a student chapter. The University of Pittsburgh will receive the charter at the opening dinner.

Harold A. Mosher, Society president, is scheduled to address Board members at the dinner. The title of his talk will be "The Challenge for the Society in 1960."

As usual, the Executive Committee will convene prior to the official opening of the fall session. They will meet for two days, October 14-15.

Many social activities are set for the session. Mrs. William Wachter and Mrs. Don McNeil are serving as co-chairman for the ladies program. Among the events they have scheduled are a tour of Pittsburgh plus luncheon and entertainment at the Pittsburgh Athletic Club.

Toledo Society Installs Officers

The Toledo Society of Professional Engineers installed new officers at their recent annual banquet.

The new officers are: Harold A. Kelley, president; William C. Turnbull, first vice president; E. Alfred Picardi, second vice president; Joseph C. Webber, secretary; Bernard J. Harbaugh, treasurer; Arthur E. Fryer, historian; Lorin H. Janzer, Roy A. Nyquist, Thomas R. Leonhardt, and Jack N. Steketee, all trustees.

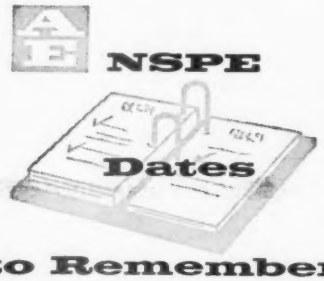
The officers were installed by Homer T. Borton, of Cleveland, president of the Ohio Society of Professional Engineers.

A "Citation and Award by the Toledo Society of Professional Engineers for Distinguished Engineering Contribution to the Public Welfare" was presented to Eugene V. Newman, president of the Society for 1951-52, by Charles E. Hatch. This was the fourth such award given in the 24-year history of the Society.

The following past presidents were honored guests: Carleton S. Finkbeiner, Delos M. Palmer, Bernard G. Kesting, George J. Haase, William P. Sanzenbacher, William E. Hallauer, Arthur E. Fryer, Eugene V. Newman, Alfred H. Samborn, Ralph J. Nopper, Charles E. Hatch, Thomas B. Henry, Norman R. Drulard and Glenn J. Sampson.

Milwaukee Chapter Officers

The results of the election of officers of the Milwaukee Chapter, Wisconsin SPE, was announced at the annual WSPE Ladies Night recently. New officers are, l.-r.: Lou Geiger, State director; A. Anderson, chapter director; Foster Koehn, president; J. R. Meyer, secretary-treasurer, and C. Nagel, past president. Dean Kurt F. Wendt of the University of Wisconsin was guest speaker for the meeting.



to Remember

Virginia Society of Professional Engineers — Annual Meeting, October 8-10, 1959, Roanoke Hotel, Roanoke, Virginia.

West Virginia Society of Professional Engineers—Annual Meeting, October 8-10, 1959, Oglebay State Park, Wheeling, West Virginia.

National Society of Professional Engineers—Fall Meeting, October 15-17, 1959, Penn-Sheraton Hotel, Pittsburgh, Pennsylvania.

Washington Society of Professional Engineers—Annual Meeting, November 6-7, 1959, Winthrop Hotel, Tacoma, Washington.

Professional Engineers of Oregon —Annual Meeting, November 13-14, 1959, Benson Hotel, Portland, Oregon.

Maine Society of Professional Engineers — Annual Meeting, November 14, 1959, Augusta, Maine.

Arkansas Society of Professional Engineers — Annual Meeting, November 27, 1959, Marion Hotel, Little Rock, Arkansas.

Puerto Rico Society of Professional Engineers—Annual Meeting, November, 1959, Building of the Colegio de Ingenieros, Hato Rey, Puerto Rico.

National Society of Professional Engineers—Winter Meeting, February 18-20, 1960, Broadview Hotel, Wichita, Kansas.

National Society of Professional Engineers—Annual Meeting, June 8-11, 1960, Statler Hotel, Boston, Massachusetts.

By Mrs. Garvin H. Dyer, Chairman of the Ladies Auxiliary Advisory Committee.

Picnics during the summer months afford many auxiliaries an excellent opportunity for achieving one of the main goals of all auxiliaries — that of promoting good fellowship among the members and their families. The informal atmosphere of a picnic lends itself well to this objective, and many auxiliaries schedule these affairs annually. Among those who hold annual picnics are Bucks County Chapter, Penn.; Erie, Penn.; Champaign, Ill.; Cleveland, Ohio; Dayton, Ohio; Lorain, Ohio; Parkersburg, W. Va.; Weirton, W. Va.; Smoky Valley Chapter, Kansas, and Northwest Chapter, Oklahoma.

Another popular activity is membership teas or coffees. Many auxiliaries have these in honor of prospective new members, while some honor the wives of graduating engineers from a local engineering school, the latter usually being held in the spring while the membership teas and coffees are usually in the early fall. Some auxiliaries who include this activity on their agenda are Erie, Penn.; Piedmont Chapter of South Caroline; Lake St. Clair Chapter of Michigan; Western Chapter of Missouri; Sante Fe, N. M., and El Paso, Tex.

At a recent meeting of the Auxiliary of the Gloucester-Salem Chapter of New Jersey two interesting films were shown, "A Bridge is Born," a full story of the Walt Whitman bridge crossing the Delaware River from Philadelphia to Gloucester, N. J., and "Delaware Valley Port Authority." Both films are published by the Delaware Valley Port Authority, Camden, N. J., and are on loan. These films were also shown to about 3,100 students in various high schools with a speaker provided by the Gloucester-Salem Chapter. After these pictures were shown in the schools, several service clubs in the area asked to have the films shown and a speaker on professional engineering. This Auxiliary cooperates with the men's Chapter in a program of career guidance for high school students and screens candidates for recommendation to the State Scholarship Committee for the Armco Scholarship.

High School Students Guests of Atlanta Chapter

Fifty outstanding high school seniors from throughout the State of Georgia were honor guests at a special dinner given by the Atlanta Chapter, Georgia SPE, recently. Approximately 100 professional engineers attended the dinner.

Lt. Governor Garland T. Byrd was the principal speaker. The highlights of the lieutenant governor's speech was his emphasis on quality rather than quantity in engineering and the opportunities in engineering and science throughout the State.

President Floyd Elsom welcomed the students.

Special guests included the members of the State Board of Registration, the State Board of GSPE and Dr. Paul Weber, dean of faculties, of Georgia Tech. Other special guests were the presidents of AIEE, ASCE, ASME, AIChE, and the Georgia Engineering Society.

New President

The gavel changes hands at the annual meeting of the Professional Engineers of Colorado. Edward W. Thorson, (left) immediate past president, hands the gavel, to the new president, Professor Wilbur Parks.

Students Honored in Georgia

Floyd Elsom, president of the Georgia SPE, greets some of the outstanding high school students at a special dinner given by the Atlantic Chapter. (See story above.)

Thoughts on Professionalism...

By PAUL H. ROBBINS, P.E.
NSPE Executive Director

Total Professional Development

NSPE directs its efforts to those professional matters of common interest to all professional engineers. In addition, membership and active participation in at least one of the technical societies representing his field of practice is recognized as a prime essential for achieving full stature as a professional engineer.

NSPE, therefore, recommends that each member join and support the work of the technical society which serves his particular field of practice (NSPE Policy No. 51).

NSPE since its founding has based its philosophy of organization for the engineering profession on a belief that every engineer has two facets to his professional development. To be worthy of the status and recognition to which he aspires and believes himself entitled by way of his education and experience, he must be concerned with continued improvement of each.

is contribution to society and our economy is, of course, to a great degree based on his technical competence. All engineers today have only to look at the tremendous strides during the last ten years in even the most static fields of the profession to recognize the necessity for keeping up-to-date with the technical advances of the profession. Likewise, of course, he is concerned with his professional development involving, to a degree, the climate in which he can most effectively use his technical competence. For any engineer to neglect either of these aspects of development means that he is as partially effective as if he were to strengthen only one leg, one arm or one eye in his physical development.

It has been NSPE's belief that each of these facets of the engineer's development needs the concentrated effort of an organization devoting its entire energies in each of these fields. Historically we have concerned ourselves with our technical development, and certainly as we have emerged in the last few years with greater concern for our professional development it would be the height of fallacy to neglect the continued support and concern for those organizations expanding our technical role.

Policy 51 of the Society has been in existence for many years, and the vast majority of the members of NSPE have implemented this policy by membership in at least one or more technical society. Unfortunately, there are too many members of the profession who see no personal responsibility for support and activity in any engineering society. The PECBI survey on career satisfactions presented the disturbing statistic that while about two out of three engineers felt the public generally did not recognize engineering as a profession, only a little better than one out of two engineers surveyed belonged to any engineering society. Even among the 50-odd per cent who belong to engineering societies, an alarmingly small percentage admitted to being even fairly active in those societies. The strength of the profession and its future development are largely dependent on the degree to which individual engineers are willing to support those organizations working for the betterment of the profession. For NSPE members, Policy No. 51 means that this not only involves support and activity for NSPE but membership and active participation in the affairs of the technical society or societies of the major interest of the engineer. The Inter-Society Relations Committee in its report to the Board last June considering the many and complex problems of the organization of the engineering profession re-emphasized the necessity for all members of NSPE to personally implement this policy.

Although there are a number of technical societies in which NSPE members may be interested, the most common interest, of course, will be in the founder societies. For those members who would like to receive additional information as to the services available from these societies, as well as procedures for membership, the addresses of the founder societies are:

American Institute of Chemical Engineers, F. J. Van Antwerpen, Executive Secretary, 25 West 45th Street, New York 36, New York;

American Institute of Electrical Engineers, N. S. Hibshman, Secretary, 33 West 39th Street, New York 18, New York;

American Institute of Mining, Metallurgical & Petroleum Engineers, E. O. Kirkendall, Secretary, 29 West 39th Street, New York 18, New York;

American Society of Civil Engineers, William H. Wisely, Executive Secretary, 33 West 39th Street, New York 18, New York, and

The American Society of Mechanical Engineers, O. B. Schier, II, Secretary, 29 West 39th Street, New York 18, New York.

Members interested in other technical societies who do not have the addresses readily available can secure same by writing NSPE headquarters.

Gruehr Elected President New York State SPE

Dr. Anatole R. Gruehr, head of the Economics Department at the Polytechnic Institute of Brooklyn, has been installed as president of the New York State SPE.

Other officers who will serve during the 1959-60 year include: Victor E. Hall, vice president; Charles A. Hescheles, second vice president; John A. Mathes, financial secretary, and Daniel J. O'Connell, treasurer.

SWISS

(Continued from page 26)

next fifteen years. Included in this new construction is a huge project known as the Grande Dixence in the southwestern Alps which will give the Swiss claim to the highest artificial dam in the world.

The country's long experience in the hydro-electric field, has made the Swiss one of the leaders in the development of power equipment particularly steam and gas turbines and generators. It is also considered to be far advanced in the production of electrical railway equipment which it exports around the world. Its own network of 3,510 miles of railroad is 97.5 per cent electrified.

In a country that must import nearly all of its raw materials and almost seventy per cent of its foodstuffs, exports must be its very economic life blood. At the present time, Switzerland is putting about one-third of its total industrial product into the world's markets with Germany, the U. S., France, and Italy as the big customers. The list of exports reflect the diversification of the Swiss manufacturing — watches, optical instruments, map making instruments, power equipment, railway locomotives, diesel engines, and textile machines.

The U. S. has been averaging between $150 and $200 million worth of purchases annually since World War II. Almost half of the purchases are from the Swiss watch industry. Machine tools and electrical equipment account for another eleven or twelve per cent;

(Continued on page 44)

TRAFFIC

(Continued from page 34)

Since the recent surge of publicity over automotive safety, the industry has been anxious to let the public know that it is concerned with safety in its vehicles.

Charles A. Chayne, vice president in charge of the engineering staff at General Motors, recently wrote:

"The surge of interest during the past two or three years in some quarters in the subject of automobile safety characteristics might suggest to the uninformed that a new concept had been developed in the field of traffic safety.

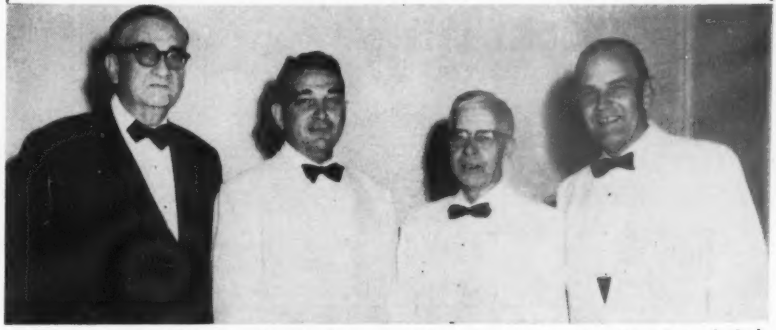
"Nothing could be further from the truth. Automobile manufacturers have been actively concerned with the inherent safety of their products since the earliest days of the industry. This is conclusively demonstrated by the steady parade of new safety features in cars down through the years. Many of the improvements which stand today as major milestones in vehicle safety progress were adopted a generation or more ago. . . ."

There is plenty of evidence to back up Mr. Chayne's words, but a glance at highway injury and death statistics make it quite evident that there is sufficient challenge left in the field of safety for industry, the doctor, and the professional engineer.—**End.**

Membership Award in Mississippi

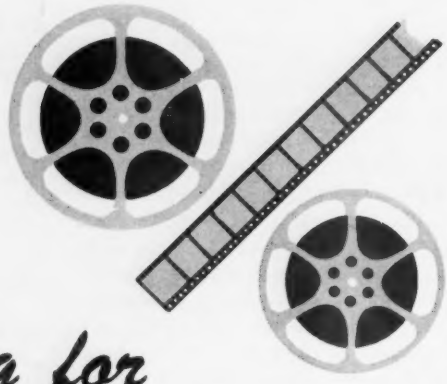
Arthur C. Miller, right, president of the Mississippi SPE looks on as the MSPE is presented the NSPE Membership Award for Group II. Recieving the plaque for the MSPE is James W. Dement, Jr., center, chairman of the Membership Committee of MSPE as he is congratulated by Clyde V. Maxwell, Jr., left, national director.

Participate in D.C. Meeting



Shown are officials who took a prominent part in the District of Columbia Society's annual meeting. They are, l.-r.: M. X. Wildberding, president of the DCSPE; Max H. Morris, past DCSPE president; Clark A. Dunn, past NSPE president, and Harold A. Mosher, 1959-60 Society president.

NSPE Presents:



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Here is a film covering the activities of the National Society of Professional Engineers at the chapter, state, and national levels. A milestone in the NSPE public relations program, "Building for Professional Growth" is a filmed presentation on the values and benefits of Society membership. Activities covered in the film include NSPE efforts in registration; research projects such as the Income and Salary Survey, the Professional Engineers Conference Board for Industry reports; legislative cooperation; National Engineers' Week, and other programs. Also included are scenes from actual chapter, state, and national level meetings.

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ETHICS

(Continued from page 29)

to define. But until ethics are defined, any administration of them is, at best, loose and suspect. Fortunately, the NSPE Ethical Practices Committees of 1955-56 and 1956-57 recently heeded a cry, similar to one made years ago by our country's first president, and published a compilation of ethical standards to which all professional engineers can repair.

These committees produced a booklet entitled *Ethics for Engineers* which contains the "Canons of Ethics for Engineers," the "Engineers Creed" and the "Rules of Professional Conduct." All but a few of the "Rules of Professional Conduct" had been previously published elsewhere. Quoting from the booklet's introduction, the guiding principle behind the phrasing of the controversial "Rules of Professional Conduct" is "that the words mean exactly what they say—that there is no concealed, hidden, or obscure intent." In his foreword of *Ethics for Engineers,* Dean C. J. Freund, then chairman, Ethics Committee, Engineers' Council for Professional Development, states:

> "It is hoped that the brochure will be helpful to engineers, engineering societies and engineering educators."

We suspect Dean Freund's "hope" is merely an expression of a kind man's courtesy. All members of the National Society of Professional Engineers recognize that the brochure is not only helpful, but, as a written compilation of ethical policy, it will become one of the bulwarks on which NSPE rests.

For this reason, it becomes the duty of each professional engineer to obtain this valuable booklet and come to a full knowledge of what it says and directs him to do. All members of the National Society, whether consulting or employed engineers, have a stake in making the contents of this booklet grow in wisdom and morality through orderly revision and annotation. We should not regard this initial

booklet as belonging to a committee and of no concern to each of us. It is our personal and individual code where our business conduct is concerned. It belongs to each of us. Each of us is bound by its precepts.

It does no good to criticize the booklet's contents and stop there. Change and amend it, where necessary, by orderly action. For as surely as a professional engineer is defined ethically by his own concept of moral duty and ideal human behavior, just as surely is this booklet important, for it defines limits of ethical conduct pertaining to activity specifically in the realm of professional engineerng.

Perhaps, a word of caution is in order. The booklet, *Ethics for Engineers,* cannot, nor is it supposed to, supersede or take the place of your individual morals. Individual morals supplement the booklet and not one of us can afford to permit a sloppy attitude toward ethics to govern our behavior. Individual failures in this area subject all professional engineers to bad publicity or, worse, to derision from our neighbors.

What happens if lawyers become more interested in clients' fees than in justice; if doctors become more interested in income than in healing? The same lack of understanding of values of life continuously crowds the doorway into our own profession. Let it enter and it will retard our growth and public acceptance as a group and as individuals.

Obtain the booklet, *Ethics for Engineers.* Study it. Compare it with your personal concepts of morality and ideal human behavior. Be concerned enough about it to petition for corrections where it is in error. Where it is right, strengthen and implement it through your individual behavior. This is a job where progress, as a group and individually, is required. It is the kind of progress that does not seek to limit itself but is continually exploiting all openings where the common good may be served.—**End.**

Annual Wisconsin Meeting

Officers of the Wisconsin Society of Professional Engineers are shown at the sixteenth annual meeting of the Society held in Milwaukee. They are, l.-r.: Henry A. Kallsen, secretary-treasurer, Madison; Clifford J. Nelson, outgoing president, Black River Falls; Harold C. Trester, president-elect, Oshkosh; Karl O. Werwath, second vice president, Milwaukee, and John Gammell, first vice president, Milwaukee. At this meeting the Society adopted a resolution calling for local chapters to provide career counseling service on engineering to interested parents and students in their communities.

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SWISS

(Continued from page 41)

instruments about six per cent; and chemicals and pharmaceuticals eight per cent.

The Swiss, so dependent as they are on exports, are vitally concerned about protective tariffs which hurt the competitive position of their products in the world markets. The tariff question has cropped up time and time again in trade relations with the U. S. particularly on watches which compete with the American watchmaking industry. There have also been some recent rumblings of discontent in the American electrical industry which occasionally runs into stiff competition from Swiss imports. The rumblings became quite noticeable recently when a Swiss firm was the successful bidder on a 200-megawatt steam turbine for the City of Los Angeles.

THE Swiss, to combat the problems raised by this competition, point to the fact that they too, are a good customer for American-made products. "We must sell to you, if we are to be able to buy your products."

Actually the trade exchange between the two countries has generally favored the U. S. For example in a ten-year period between 1947 and 1957, the U. S. bought $1,395,600,000 worth of products from Switzerland and in the same period sold the Swiss products worth $1,933,800,000—a trade balance of $538,200,000 in favor of the U. S. Switzerland's main imports from the U. S. are metals, machines, vehicles, instruments, cotton, chemicals, and tobacco (it buys about 40 per cent of the tobacco produced in Maryland).

U. S.-Swiss relations go far beyond the commercial channels. Both countries have enjoyed a long exchange of people, and ideas. Othmar Ammann, designer of George Washington Bridge in New York and the San Francisco Bay Bridge is a prime example of top engineering brains that this country has imported from Switzerland. There have been dozens of other Swiss-born American leaders in the engineering, scientific and industrial world . . . Louis Chevrolet, pioneer in the American automotive industry; Felix Bloch, 1905 Nobel prize winner in physics; Henry Clay Frick, industrialist and partner of Andrew Carnegie; Albert Gallatin, scientist and Secretary of the Treasury; Ferdinand-Rudolph Hassler, first director of the U. S. Coast and Geodetic Survey. . . .

Today, hundreds of Swiss-trained engineers are active in the U. S. The Swiss Federal Institute of Technology, alone, lists 350 registered alumni as residents of the U. S. And it's not all a one way street. International Business Machines, Radio Corporation of America and Battelle are among U. S. firms which have established branch research laboratories in Switzerland, not to mention the dozens of firms which use the country for a financial base for their European operations.

The new Swiss attache in Washington, Dr. Hochstrasser, attributes much of his country's friendly trade relations with the U. S. to the cooperative attitude which has prevailed in many fields of engineering and science. This is the way Dr. Hochstrasser put it in an interview with the AMERICAN ENGINEER:

"So far, due to the fact that Switzerland's products are highly valued in this country, we have not been forced either to cut our imports from the U. S. or to accept financial aid from this country . . . it is to a large extent in the hands of the engineer that this healthy situation is maintained, and I hope therefore that the close and friendly cooperation between the U. S. and Switzerland's engineers will continue and still be improved."

Export of Swiss engineering talent may be slower in the future now that Switzerland, itself, is facing a shortage of engineers. Hoping to overcome this shortage the Swiss are planning to enlarge the Swiss Federal Institute of Technology in Zurich and the Engineering School at the University of Lausanne, the two training centers for professional engineers in Switzerland.

Graduates of the two schools receive a diploma which the Swiss consider roughly equivalent to the Master's degree in the U. S. Before embarking on the four-year engineering course, the student must complete an advanced high school curriculum which, when completed, is equal to second year work in American colleges and universities, according to Swiss standards.

If the student desires to attend a university he is required to pass an examination on the high school work and receive a "Certificate of Maturity" certifying that he is prepared to study the advanced curriculum.

In addition to the Federal institute and the Lausanne engineering school, there are technical institutes which provide training equivalent to that required for the Bachelor's degree in the U. S.

There is no official registration or licensing by the Government, although the professional societies have tried for some time to establish certain standards for the use of the title "Diplom Ingenieur" which the engineer assumes after successfully completing work at either the Federal Institute of Technology or the Engineering School of the University of Lausanne. The principal professional engineering society in Switzerland is known as SIA, the Swiss Society of Engineers and Architects. Since the majority of the Swiss engineers are trained at the Federal Institute of Technology, the Society of Alumni of this institute is also considered as a professional representative of the engineer.

The engineer is a highly valued individual in the Swiss culture. For the Swiss are well aware that the responsibility for their economic well-being rests largely on the skills of engineering.

The Swiss engineer, like his American counterpart, is facing a myriad of new challenges in a world that is becoming more and more dependent on the engineering and scientific community. He is faced with the task of adapting new production techniques, like automation, to the particular needs of Swiss industry. And he faces even bigger jobs in fields like atomic energy which may eventually replace hydro-electric resources as the principal source of power for Switzerland.—**End.**

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SIDE SHIFT LOAD GRAB — Item 31

A new side shift load grab with multi-purpose arms has been announced by Lewis-Shepard Products, Inc. The SpaceMaster Model "J" with Cascade clamp and Little Giant multi-purpose arms makes it possible to handle almost any type of non-palletized load. Multi-purpose arms eliminate the necessity of using a different truck or changing arms when handling different types of loads. These all-purpose arms will handle unit loads of drums, cartons, crates, bales, rolls and many others, according to the manufacturer. The arm gripping surface is either smooth or rough-top rubber bonded to steel sheets which are screwed to the plates.

ROL-A-CHART — Item 32

Project schedules and job progress charts no longer need to use up hours of costly drafting time. These schedules are quickly and easily plotted on Rol-a-chart, a new concept in visual controls. Rol-a-chart can also be used for bid scheduling, maintenance scheduling and equipment and manpower allocation. Rol-a-chart entries are made directly on a rotating, transparent, plastic sleeve with a marking pencil, and erased or changed with the wipe of a cloth.

POWER DRIVE CALCULATOR — Item 33

A new calculator slide rule for computing the proper roller chain for every type of drive has been produced by Atlas Chain & Manufacturing Company. This slide rule has been developed to supply design engineers and others responsible for specifying power with all necessary technical data for the selection of roller chain and sprockets. In easy step-by-step form it covers every factor. Each of the important steps in the application of the right drive is done with a combination of six slide rules made into one large, handy calculator.

MOISTURE METER — Item 34

Exact moisture content of sand, soil or any bulk material is measured instantly, automatically by a new portable moisture meter. This lightweight electronic instrument is claimed to avoid costly delays and equipment downtime by taking the guesswork out of moisture content. Slung over the shoulder, it measures accurately the exact moisture content of surface or subsurface sand, soil or any bulk material.

SPEED FEED — Item 35

A new "speed feed" feature for faster insertion of documents has been incorporated in the Dial-A-Matic "Auto-Stat" photocopy machine made by American Photocopy Equipment Company. This change in the desk-top, all-purpose APECO copying unit will reduce to nineteen seconds the time required for reproducing any original document up to fifteen inches in width, it is claimed. The new feature consists of specially designed rollers which clamp the document being inserted and guide it automatically.

CUSTOM-BUILT COACH — Item 36

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SOLVENT — Item 37

Necon Products announces the release of a new rust and scale solvent. Necon-101 is a highly concentrated liquid which contains a specially prepared inhibitor. This solvent will dissolve most mineral scales including deposits of lime, magnesium, rust, sodium, plaster-of-paris, and concrete—yet it will not affect pipes of steel surfaces, according to the manufacturer. Necon-101 is claimed to lend itself nicely for descaling tankless heaters, condensers, compressors, pipe lines, engine and casting blocks, etc.

This column describes new products of general interest to professional engineers. For further information, circle the item number in the Readers' Service Dept. and mail to AMERICAN ENGINEER.

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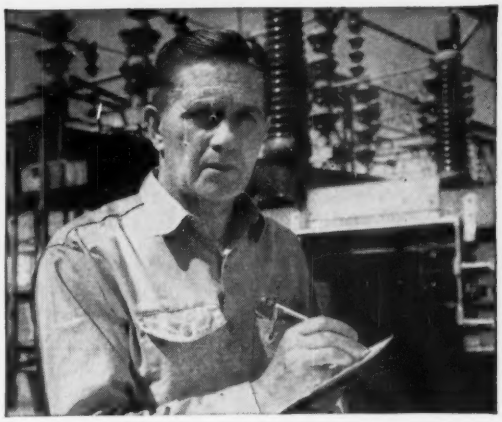

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